

ALAGAPPA UNIVERSITY

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DIRECTORATE OF DISTANCE EDUCATION

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4.1

MBA (RETAIL MANAGEMENT)
PAPER- 3.6

RETAIL LOGISTICS AND SUPPLY CHAIN

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Self Learning Material



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SYLLABUS

MBA (Retail Management)

3.6: RETAIL LOGISTICS AND SUPPLY CHAIN

Unit 1: Concept and Scope: Concepts of Logistics and supply chain- Importance of Logistics in these days global Sourcing, Production and consumption- Dimension of Logistics: Macro and Micro aspects- Supply chain contours: Backward and forward linkages- Supply chain efficiency- Logistics as a competitive edge driver- Peculiarities and diversity of needs of Logistics for Retailing.

Unit 2: Logistics and Procurement: Logistics as a Support function of Procurement and Vendor Facilitation - Logistics as interface function of Demand Forecasting, Global procurement, Tracking inward shipments and Storage Planning- Logistics as an enabler of Just-in-Time (JIT), Kanban (A scheduling system for lean inventory), Vendor Managed Inventory (VMI) for Vendors and the firm.

Unit 3: Logistics and Marketing: Logistics as a Support function of Order Fulfillment, Assembling & Labeling from Multi-storage points and Delivery- Logistics as an interface of Market forecasting, Stock level management, invoice or sales documentation, picking products, consolidation, transport-packaging, packing, marking, preparing outbound documentation and shipping out by loading into containers- customer facilitation tracking out-bound shipments.

Unit 4: EXIM Logistics: Importance of Global Logistics- Export Logistics: Special Aspects of EXIM logistics- Picking, Packing, Vessel Booking [Less-than Container Load(LCL) / Full Container Load (FCL)], Customs, Documentation, Shipment, Delivery to distribution centers, distributors and lastly the retail outlets- Import Logistics: Documents Collection- Valuing- Bonded Warehousing- Customs Formalities- Clearing- Distribution to Units- Security & Insurance- Multimodal Transport- UN International convention on MT of Goods- Terminal Networks: Types and Roles.

Unit 5: Logistics Service Providers: 3PL/4PL Services- Differences between 3PL & 4PL- Common Services for 3PL/4PL: Invoice management, call centers, warehouse/distribution facilities - Carrier management- 4PL Specialties: Implementation Center: Business process analysis/scoping, Development of all activities into an open systems framework- Product/Skill Centers: Supply chain engineering –4PL Value Added services: Knowledge Transfer, Business Development and Functional Support.

Unit 6: Special Logistics: Inter-modal and Multimodal Logistics- Logistics for Trade Fairs and Events - Consolidation and Group age- Logistics of Time Perishable and Logistics of Quality Perishables- GS1 System of world-wide supply-chain standards system- E-Logistics –Warehouse Logistics- Reverse Logistics.

REFERENCES

1. Sahay B.S, *Supply Chain Management for Global Competitiveness*, Macmillan India Ltd., New Delhi.
2. Reguram G, Rangaraj N, *Logistics and Supply Chain Management Cases and Concepts*, Macmillan India Ltd., New Delhi..
3. Coyle, Bradi & Longby, *The Management of Business Logistics*, West Publishing Co. Martin Christopher, *Logistics and Supply Chain Management.*
4. Dawson, Larke and Mukoyama, *Strategic Issues in International Retailing,* Routledge, 2007.
5. Paul R. MurphyJr. and Donald Wood, *Contemporary Logistics.*
6. Harvard Business Review, *Managing Supply Chains.*
7. Alan E. Branch, *Global Supply Chain Management and International Logistic .*
8. Simchi-Levi, Kaminsky & Simchi-Levi, *Managing the Supply Chain: The Definitive Guide.*
9. Ray, *Supply Chain Management For Retailing*, TMH, 2010.
10. James B. Ayers, Retail Supply Chain Management, Auerbach Publications, 2007.

CONTENTS

UNIT 1 INTRODUCTION TO LOGISTIC AND SUPPLY CHAIN

Structure

1.0 INTRODUCTION

Case Let: Wal-Mart's Logistic and Supply Chain Management Practices

Let us discuss the supply chain management practices at Wal-Mart, the leading retailer in the world. The US-based Wal-Mart ranked first in the global Fortune 500 list in the financial year 2001-02 earning revenues of $219.81 billion. Wal-Mart was the largest retailing company in the world. The company was much bigger than its competitors in the US - Sears Roebuck, K-Mart, JC Penney and Nordstrom combined. In 2002, Wal-Mart operated more than 3,500 discount stores, Sam's Clubs and super centers in the US and more than 1,170 stores in all major countries across the world. The company also sold products on the Internet through its website, walmart.com. section. Wal-Mart was one of the largest private sector employers in the world, with employee strength of approximately 1.28 million. Wal-Mart managed various components of the supply chain including procurement, distribution, logistics and inventory management. It covers how the use of innovative IT tools has helped the company in improving the efficiency of

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supply chain. The benefits reaped by Wal-Mart due to its efficient and effective supply chain management system.



Wal-Mart always emphasized the need to reduce its purchasing costs and offer the best price to its customers. The company procured goods directly from manufacturers, bypassing all intermediaries. Wal-Mart was a tough negotiator on prices and finalized a purchase deal only when it was fully confident that the products being bought were not available elsewhere at a lower price.

Wal-Mart strongly believed and constantly emphasized on strengthening its relationships with its customers, suppliers and employees. The company was very vigilant and sensed the smallest of changes in store layouts and merchandising techniques to improve performance and value for customers. The company made efforts to capitalize on every cost saving opportunity. The savings on cost were always passed on to the consumers, thereby adding value at every stage and process. Wal-Mart also enjoyed the benefits of low transportation costs since it had its own transportation system which assisted Wal-Mart in delivering the goods to different stores within (or sometimes less than) 48 hours.

Source: *http://www.icmrindia.org*

In this unit, we would first attempt to explain the term "logistic" and then meaning and concept of logistic and supply chain. To make the learning easier, we will take the help of globally recognized best practices. Various sections and sub-sections of this unit cover dimension of logistics, supply chain contours, logistics as a competitive edge driver, peculiarities and diversity of needs of logistics for retailing and logistics' role in international trade.

Logistics has been carried out since the beginning of civilization — it is hardly new. Though, implementing best practice of logistics has become one of the most stimulating and challenging operational areas of business and public sector management.

The word, Logistics' is derived from French word 'Loger', which means art of war pertaining to movement and supply of armies. Similar to fighting a war in battlefield, marketing managers also prepare a suitable logistics plan that is capable of fulfilling the company objective of meeting the demand of targeted customers in a profitable way.

'Supply Chain Management' can be defined as the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective and efficient ways possible. There can be various types of supply chains. There is a basic supply chain, and an extended supply chain. The definition of a basic supply chain is: a set of three or more companies directly linked by one or more of the upstream or downstream flows of products, services, finances and information from a source to a customer. An extended supply chain includes suppliers of the immediate supplier and customers of the immediate customer, all linked by one or more of the upstream and downstream flows of products, services, finances, and information.

1.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand the concepts and Scope of Logistics and supply chain
- Identify the dimension of logistics
- Discuss the supply chain contours: backward and forward linkages
- Familiarize with logistics as a competitive edge driver
- Describe the peculiarities and diversity of needs of logistics for retailing
- Know the logistics' role in international trade.

1.2 CONCEPTS AND SCOPE OF LOGISTICS AND SUPPLY CHAIN

Logistics, from the point of view of a layman, is the technique of managing and controlling the flow of goods, energy, information and other resources like products, services, and people, from the source of production to the marketplace. This concept is applicable to moving and storing a physical product in a manufacturing setting as well as in areas as service industries, the armed forces and even environment management.

One dictionary definition of logistics is – "The time related positioning of resources." However, a formal definition of logistics management can be "design and operation of the physical, managerial, and informational systems needed to allow goods to overcome time and space".

As far as business logistics is concerned, a popular definition is "getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost (from the producer to the consumer)."

In 1991, the Council of Logistics Management defined logistics as "Logistics is the process of planning, implementing and controlling the efficient and effective flow and storage of goods, services and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements".

Therefore, business logistics is a science of processes that deals with the end-to-end flow of goods and incorporates all industry sectors. The goal of logistic work is to manage supply chains cycles in a manner that results in greater efficiencies.

One of the main functions of logistics is to make the goods and services available to the place where there is demand for the product. Supply chain is the process that is involved from the procurement of raw materials till the outcome as finished products. The logistics and the supply chain management is the two sides of a coin. They are interrelated and they function on their own simultaneously. Some experts distinguish supply chain management and logistics while others consider the terms to be interchangeable. From the point of view of an enterprise, the scope of supply chain management is usually bounded on the supply side by your supplier's suppliers and on the customer side by your customer's customers. The logistics plays an important role between sources of demand and sources of supply. The supply chain management is the planning and management of all activities involved in sourcing and procurement, conversions, and logistics management activities, including coordination and collaboration with suppliers, intermediaries, third party service providers and customers to facilitate integration of supply and demand management within and across companies. Supply chain management is used in filling the gaps and the logistics is used inclosing the gaps. Thus we can say that the supply chain management and logistics are part and parcel of a solution to the same purpose. Overall productivity of the organization increases if the supply chain management and logistics goes hand in hand.

Logistics deals with the management of production, material and information flows, sourcing and services. Logistics as a concept combines both operational issues such as distribution, warehousing, order processing and packaging and strategic issues related to competitive advantage and new business models. Since, Logistics decisions have two implications, viz., level or customer satisfaction and the total cost of sales, it is difficult say a best logistic strategy. The significance of logistics in business is for this same reason that it influences the cost aspect and the satisfaction of the consumers. And interesting these two aspects moves in opposite direction as far the value creation objective of a firm is given. A Firm always likes to keep its cost lower and lower and the satisfaction its customers higher and higher. Thus, it is all about how we can optimize the satisfaction level of the customers and the cost impact for a firm. Thus, we can also adopt mathematical models for optimizing the logistic function of a firm.

Main components of logistics include:

Inbound Logistics + Material Management + Physical Distribution

Inbound logistics means the movement of materials received from suppliers. Material management means the movement of material and components inside a firm. Physical distribution refers to movement of goods outward from the end of the assembly line to the customer.

According to council of logistics management: "Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption for the purpose of conforming the customer requirement."

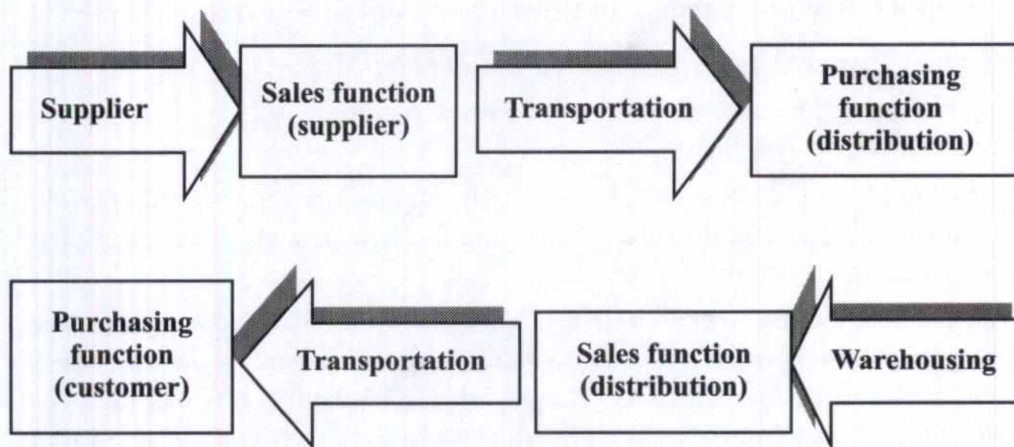


Fig. 1.1: The logistics flow chart

Logistics is typically considered as a sub-set of SCM. In SCM, five key functions are: Procure Make, Move, Store, and Service. Most view logistics as the movement of products from point A to point B and all the activities involved to make this happen (from carrier selection to planning to execution). Logistics is involved at various stages of a supply chain; from supplier to plants, from plants to distribution centres, from distributions centres to stores, from stores to customers, or any of these combinations.

The development of interest in logistics after industrial revolution and World War II contributed to the growth in scope of logistical activities. The following areas are the major scope of logistics:

- Demand forecasting
- Distribution communication
- Inventory Control
- Material Handling
- Order Processing
- Part and Service Support
- Plant and Warehouse Side Selection

- Procurement
- Packaging
- Salvage and Scrap Disposal
- Traffic and Transportation
- Warehousing and Storage
- Time and Place Utility
- Efficient Movement to Customer
- Return Goods Handling
- Customers Service

1.2.1 Importance of Logistics in these days Global Sourcing

International logistics management has two major components:

International movement of products and raw materials, title transformation, payments, controlling risk factors.

In parallel with the above activities, an information network is hard at work. Information sharing and collecting is very important to run an effective global logistics management system

The efficiency of the global logistics management of any company can make everything look easy. However in order to attain those efficiencies your employees need to understand the fundamentals. The most basic fundamental is that logistics management is not just domestic anymore nor is it just for large corporations. Small and midsize companies have to be global logistics management savvy if they wish to survive. The growth and development of a company is largely dependent on the global logistics management system and its most important asset – employees.

1.2.2 Production and Consumption

It is the major objectives of supply chain management and which are implemented by various organisations to enhance their competitiveness. Ensuring production and consumption lines function smoothly because high-quality parts are available when needed. Production and consumption can run smoothly as a result of fulfillment and logistics being implemented correctly. If the correct quantity is not ordered and delivered at the requested time, production and consumption will be halted, but having an effective supply chain management system in place will ensure that production and consumption can always run smoothly without delays due to ordering and transportation.

1.3 DIMENSION OF LOGISTICS

The big challenge is to manage the whole logistics system in such a way that orders fulfillment meets or exceeds customer expectations. Following are the dimensions of logistics:

NOTES

1.3.1 Macro Aspects

Value-Added Role of Logistics

A. Form utility:

(i) Primarily the result of manufacturing or assembly operations

(ii) Logistics provides form utility through its impact on shipment size and packaging

B. Place utility:

(i) Logistics provides place utility by moving goods from production surplus points to points where demand exists

(ii) Reducing logistics costs expands market area for firm

C. Time utility:

(i) Logistics creates time utility by having goods and services available when demanded

(ii) This is accomplished through inventory management, transportation management, and strategic location of goods and services

D. Possession utility:

(i) Created primarily through the basic marketing activities related to the promotion of products and services

(ii) However, possession utility does not occur without logistics support

Economic Impacts of Logistics

A. Economic development and specialization:

(i) Transportation investment often a key to facilitating economic development

(ii) Extent of market determined by logistics

(iii) As is ability to take advantage of comparative or relative advantage

B. Variety of goods:

Ability to provide a wide assortment of goods depends greatly on logistics capabilities

C. Prices:

As already noted, logistics represents about 10% of GDP, and a much larger percentage of the value of many products and services

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D. Land values:

Access to transportation service affects the economic potential of land

1.3.2 Micro Aspects

Logistics Interfaces with Operations/Manufacturing

A. Length of production runs:

(i) Traditionally, firms sought production economies by producing large volumes each time they had a production line setup or changeover

(ii) However, this led to very large inventory levels3.move to "pull" systems rather than "push" systems

B. Seasonal demand:

Build-up of seasonal inventories to meet demand and to smooth production

C. Supply-side interface:

(i) "materials management"

(ii) supplier relations is critical to efficient production and logistics

(iii) logisticians involved in production scheduling

D. Protective packaging:

Most firms consider this a logistics activity

Logistics Interfaces with Marketing

A. Price:

(i) Product pricing schedule often tied to transportation pricing schedule (i.e., price discounts for product given at volumes where transportation price discounts occur)

(ii) Logistics costs must be factored into product price - thus, logistics approach must be consistent with firm's product pricing strategy

B. Product:

(i) Size, shape, weight (density), packaging, and other physical characteristics affect logistics (e.g., size and weight affect transportation and storage)

(ii) Post cereals example

(iii) Shipping "knocked down"

(iv) Consumer packaging: compatibility with "industrial package" and product protection and security

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C. Promotion:

(i) Promotion campaigns need to be coordinated with logistics staff (or run risk of not having enough products available)

(ii) "Push" strategies vs. "pull" strategies: "push" strategies tend to make logisticians' task easier

D. Place:

Refers to the distribution channels decisions (e.g., sell through wholesalers or direct to retailers)

E. Customer service is the output of logistics.

(i) Time

(ii) Dependability

(iii) Communications

(iv) Convenience

1.4 SUPPLY CHAIN CONTOURS: BACKWARD AND FORWARD LINKAGES

Bjorn N. Petersen and Palle Petersen from Penta Partners are the authors of the danish book series "Green Logistics" (Grøn logistik). They define Green Logistics as eco-management of both Forward Logistics and Reverse Logistics. Forward logistics is the process of distribution in connection with the supply chain of goods and services to the end-consumer. Reverse Logistics is the process of continuously taking back products and/or packaging materials to avoid further waste disposal in landfills or high energy consumption through the incineration process.

Forward and reverse are very different processes. They are more akin to oil and water than butter and popcorn. In forward, it is about uniform cases. In reverse, it is about some cases, but mostly individual units/batches and mixed shipments.

With forward, you ship orders out. In reverse, you issue return authorizations to bring product back. One final twist is that when it comes back, there is the question of what to do with it. And while sometimes it can be put back into inventory, many times there are disposition requirements that involve regulatory and environmental concerns. This is the point in reverse logistics where the sizzle begins to fizzle.

By outsourcing this non-core function, companies gain efficiencies within their forward operations by clearing valuable warehouse space, maximizing internal resources and managing risk associated with regulatory compliance for product disposition. A company with a core competency of reverse logistics should have scalable regional facilities, a flexible permanent employee base, systems that allow

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mass customization and a model based on taking cost out. When working with a third-party meeting these criteria, a company is positioned to treat the specialized reverse logistics facilities as an extension of their distribution network and create a reverse-to-forward program that eliminates a touch point and the associated cost of transportation.

Companies tend to view reverse logistics as strictly the physical handling of returns. However there is also the financial aspect of managing the debit/credit scenario. And the sales and marketing impact on profitable top line revenue.

Reverse logistics directly or indirectly affects each of these functional areas. If these three functional silos—finance, sales/marketing and logistics—are not aligned, it can be a case of two steps forward, one step backward. Two critical components are needed to break down silos to achieve the success. One is information that lends itself to analysis. The other is an internal champion and collaborator. This is where the new reverse logistics management professional that is added to the internal staff is best utilized. Everyday individuals within departments are making decisions that are in the best interest of their functional area. However, what they may not understand is that while their decision may appear to be best for their specific area, when you step back and take a holistic view, the decision may not be in the best interest of the overall company. This is especially true when it comes to reverse logistics. Every company can surely cite examples such as sales making their numbers for the quarter, followed by a large volume of returns in a subsequent period, or logistics reporting improved productivity while not capturing the item detail in processing that is required by finance to enable properly crediting, or purchasing changing the packaging to reduce cost only to increase the amount of returns due to damages. The list could go on and on.

A cross-functional team committed to sharing information is the key to breaking down the internal silos, seeing the bigger picture and making better decisions. Excellent operational execution provides the data that delivers the information that allows for in-depth analysis. Technology is the enabler of systems that collect the information and the business intelligence tools that allow analysis.

The challenge with handling reverse logistics internally is that in the big pond of logistics technology needs, reverse logistics is a small fish that tends to get little to no information technology support. In today's business environment, the demand for IT resources far exceed the budgeted supply, especially for processes that are not considered a core competency for the company.

Again, this is where outsourcing can bridge the internal gap. An outsourced partner that has reverse logistics as its core business routinely makes the necessary ongoing investments to improve efficiencies, systematically drive decisions on disposition, collect more information at the most granular levels and develop enhanced business intelligence tools, including management dashboards. If the third-party reverse logistics provider represents several verticals, there is the opportunity

to share not only facilities and resources but also best practices. Internal information technology resources can then be devoted to integrating the reverse logistics information into the internal state-of-the-art forward logistics applications to better manage inventory and adjust forecasts. This allows management to keep the focus on the entire supply chain both forward and reverse.

A holistic view breeds better decision-making. One of the quickest ways to get to that point is to partner with a company that understands the operational and the informational components of reverse logistics. Some companies have said that when they add the actual cost of reverse logistics processing combined with the opportunity costs associated with investing internally, especially if the commitment is made to continuously improve, they could easily spend twice as much for an internal program compared to outsourcing.

Best-practice companies take the savings gained through outsourcing and reinvest in supply chain analysis studies that get to the root cause of the returns and implement reverse logistics improvement programs. These programs include: understanding and categorizing the reasons that consumers return product; analyzing the condition of product at each touch point within the supply chain, beginning at the manufacturing plant and extending through the retail store; studying the buying and selling practices and the financial impact of the transactions; analyzing damage across package types across divisions; and monitoring and implementing exit strategies for new product introductions.

It is important to empower and enable the reverse logistics professional to allow them to cross divisions, cross product lines, and cross functional areas to collaborate on ways to utilize the data to improve the overall company's bottom line, not just the specific department or division.

With the support of executive management, the new reverse logistics management professional can yield greater profitability opportunities for the company. Rather than focusing on the operational tactics associated with managing returns facility, their time can be refocused on strategically leading collaborative improvement efforts with their outsourced partner and their internal team members for efficiency optimization and profit maximization. Results start with accountability supported by measurements. It is a well-known fact that what gets measured gets done and reverse logistics programs are no exception.

Establishing key performance indicators for the third-party reverse logistics partner and internal functional areas will ensure that goals are achieved. It is important that the information is accessible to all parties, tools are intuitive and flexible enough to enable the full benefit of the analysis and that the KPIs are measurable to drive the action. And while many of the KPIs may appear to be the same measurements used for forward logistics, such as processing throughput, and processing rates per hour, day and month, the numbers established are very different for reverse logistics. Which gets us back to the question, if a company has a streamlined, efficient forward

logistics operation, should it add reverse logistics to its operation? It's possible, but the differences in processes and information needs require that additional investments be made, taking the focus off the core business. A best practice is to outsource the reverse and integrate into forward to get the best of both worlds. It's a way to move your business forward in reverse.

1.4.1 Supply Chain Efficiency

Supply chain efficiency and agility are both required to improve market share profitability. Firms face a balancing act between cost reduction and agility. Success in leveraging logistics reduces costs and increases customer satisfaction and, therefore, positively influences the firm's profitability. Even for commodity products, the potential exists to differentiate the product/service offering in the eyes of the customer by leveraging the delivery aspect of the mix.

Companies with service based competitiveness strategies will not be just looking at improving their complete and on-time delivery performance; they will have to leverage their performance to help them become the supplier of choice.

Competitors wanting to copy logistics leverage attained by another firm will find it difficult because it requires unique, experienced, and well-coordinated relationships between multiple parties [sources] in the channel. Thus, a superior logistics channel structure generally leads to competitive advantage.

To become the supplier of choice, firms will have to provide an "order of magnitude" difference in customer service, in the future. This means that organisations will have to dramatically shorten order lead times, measurably increase perfect orders, and develop customer unique fulfillment capabilities. Firms will have to shift their focus from competitors to customers. They will have to become increasingly agile and both supply chain responsiveness and efficiency will become critical factors in their achieving these goals.

1.5 LOGISTICS AS A COMPETITIVE EDGE DRIVER

There are two fundamental competitive strategies, which every organization has to decide to remain unbeaten in the competitive environment. Cost leadership i.e., be the lowest-cost producer in the industry or meaningful differentiation i.e., to differ by competitor in some form, that can be in terms of service like delivery time, delivery reliability etc. or in terms of technical advantages like superior features, superior product etc. In new environment, where integration is the driver to achieve competitive advantage, organizations have evolved new approaches to develop interface between two functions.

Logistics management is giving companies new ways to improve customer service, control costs and make the most of opportunities in emerging markets. As

Check Your Progress

1. Define the meaning of term logistics.
2. What do you mean by supply chain management?
3. What is forward logistics?
4. Define reverse logistics.

a result, the global expansion equation is being revised as companies employ world-class logistics based on advanced information technologies.

For business, logistics can make all the difference between success and failure, as this is the dynamic area where strategies are formulated, applied, supported and implemented. If logistics cannot deliver, core competence loses its strength, quality suffers and a firm ends up with dissatisfied customers. Today, with trade barriers falling, organisations operate in a global environment at the speed of thought, and integrated logistics is the crucial differentiator and a strategic weapon.

In an era of cut-throat competition, where functional aspects of logistics need to be efficient, the solution lies in configuring transportation facilities road, rail, sea/river or air in a way that raw materials, components and sub-assemblies (the components of inbound logistics) as well as the finished products (outbound logistics) are delivered at the right place, time and in the quantity required at least time and cost. Only then does the supply chain become efficient and responsive to the changing demand cycles. The delivery infrastructure must conform to all variables such as the location of warehouses and plants and current and future requirements.

With the growth of web-based networking and ERP (enterpriser resource planning) that allow companies to manage the value chain "on-line", the information required is available on the keyboard, and the focus is on meeting the logistics requirements with precision. The emergence of such costing tools as ABC help leverage logistical activities to control costs. Today, logistics extends across entire value chain connecting customers with business strategy and is a key driver in such crucial decisions as location of factory, depots, warehouses, distribution centres, vendors, customers and intermediaries.

With the availability of technology, logisticians run algorithms simulating the outputs under varying inputs keeping plant and market locations as fixed and develop optimal solutions through combinations of fleet size, route planning, and frequency of deliveries, depots and suppliers locations. The logisticians today are able to optimize the ways to service various distribution links in the entire value chain.

For all this, the underlying principle of strategic importance is to make customer satisfaction the objective of logistics operations. This can be translated into goals such as on-time delivery, zero errors of defects and damages which can contribute towards building the brands equity with the customer, especially where companies compete on delivery than the product.

Integrated and effective logistics can dramatically reduce turnaround times, further reach, lower operating costs and delight the end-user. It also looks at the other nodes on value chain for optimization and linkages with other activities and logistics is more likely to delivery better results if it can operate in those areas as well.

Despite the immense competitive advantage logistics can generate for the organisation, this function may still have to be outsourced. This is because logistics operations are usually faster and cheaper if organized by specialists and professionals

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who have competence in integrated logistics management and the ability to service multiple clients and products. The competencies required in executing logistics operations are increasingly becoming specialized and demand investments in resources such as data processing power, fleets and warehousing infrastructure. It is becoming increasingly difficult for an organisation focused on manufacturing or assembling, brand management, marketing and services to tackle all these issues.

Today, from customs clearance to storage, from physical distribution to material handling, from transportation to packaging, the entire gamut of logistics-related services can be outsourced, saving companies wastage of resources in creating these competencies by themselves. An increasing number of companies are turning to specialists who function on a 'turnkey' or 'start-up' basis.

With time it seems the boundaries of the physical zones in which logistics functions are becoming thinner and thinner but, at the end of the day, it must service the customers by delivering the right product in the right place, in the right quantity and at the right time is to be achieved. Ultimately, the competitive advantage will ride on the back of Logistics Management.

Whirlpool Corporation, a leading manufacturer of major household appliances, in the early 1990s became concerned about the low levels of on-time delivery performance to its dealers. It desired improved customer service and believed that an outside expert would be able to do a better job as the company saw its own core competence in manufacturing. Thus, Whirlpool was looking for an organisation that could provide it with full logistics service for its finished product from warehousing to final delivery. Thus, a JV, ERX Logistics, was established and operations were started from six Quality Express locations.

Quality Express is a national delivery network designed to serve over 10,000 retailers and 50,000 construction sites, and the system has eight regional distribution centres that hold inventory. Inventory is then shipped to one of 48 locations only as needed to fill orders. Thus, the locations do not hold inventory, but serve as cross-docking sites. Whirlpool is responsible for all of the fixed distribution centres costs and the leases for the trucks. ERX focuses on customer service and in order to meet customers needs and lower customers inventory requirements, Whirlpool lowered its minimum order quantity form about a third of a truckload to five-six pieces.

Now dealers place smaller and more frequent orders. This makes it much easier for Whirlpool to plan its own production and inventory needs and focus on manufacturing. ERX is an important link to customer service and satisfaction. The delivery drivers unload the trucks and can handle returns, claims and even reimburse the dealer. They also can unload and uncarton the product. For Whirlpool, the order cycle time has been reduced from over five days to one day in most cases and two

days for remote locations. On-time delivery has gone from 85 per cent to over 99 per cent and damage has been reduced. This innovative relationship has benefited both the parties.

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1.5.1 Logistics and Competitive Performance

Today logistics department appears on the organization charts of many large organizations. Linking logistics activities directly to organization strategic plan can work effectively to support their organization for achieving competitive advantage.

Porter user a tool called the value chain as shown in the Figure 1.2 to separate buyers, supplier and a firm into the discrete but interrelated activities from which value stems. The value chain concept may be used to identify and understand the specific source of competitive advantage and how they related to buyer value. Value is the amount a customer is willing to pay for the products, services provided by an organization. Value added is the difference between what the customer pays and the cost to the organization in providing that product or service. Porter defines the five categories of primary activity involved in competing in any industry.

- *Inbound logistics:* Activities associated with receiving, storing and disseminating input to the product. Inbound logistics is concerned with purchasing and arranging inbound movement of materials, parts, and/or finished inventory from suppliers to manufacturing or assembly plants, warehouses, or retail stores.
- *Operation:* Activity associated with transforming input into the final product form.
- *Outbound logistics:* Activity associated with collecting storing and physical distribution of the product to buyers. The area of physical distribution concerns movement of a finished product to customers. In physical distribution, the customer is the final destination of a marketing channel. In other words outbound logistics means movement of material associated with storing, transporting, and distribution a firm's goods to its customers.
- *Marketing and sales:* Activities associated with providing a means by which buyers can purchase the product and inducing them to do so such as advertising, promotion etc.
- *Service:* Activity associated with providing service to enhance and maintain the value of the product such as installation, repair etc.

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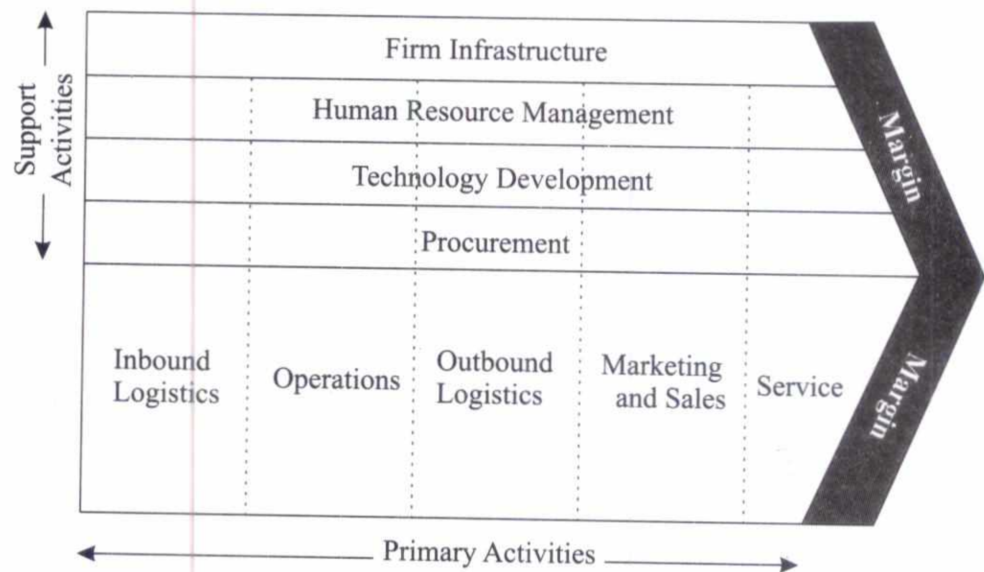


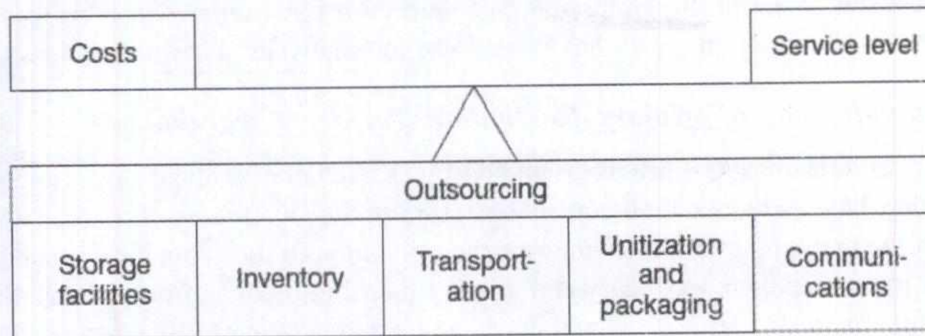
Fig. 1.2: Porter value chain

The effective logistics management can provide a major source of competitive advantage. The source of competitive advantage is found firstly in the ability of the organization to differentiate itself in the eyes of the customer from its competitor and secondly by operating at a lower cost and hence at greater profit. There are two bases of success in any competitive context. One is the cost advantage and second is the value advantage. Cost advantage is achieved through greater productivity and value advantage is pursued through a different plus over competitive offerings.

1.6 PECULIARITIES AND DIVERSITY OF NEEDS OF LOGISTICS FOR RETAILING

Managing the logistics mix in an integrated retail supply chain, while aiming to balance cost and service requirements, is the essential element of logistics management. As retailers have begun to embrace this logistics approach and examine their wider supply chains, many have realized that to carry out logistics properly, there has to be a transformation of approach and operations. Retailers were once effectively the passive recipients of products, allocated to stores by manufacturers in anticipation of demand. Today, retailers are the active designers and controllers of product supply in reaction to known customer demand. They control, organize and manage the supply chain from production to consumption. This is the essence of the retail logistics and supply chain transformation that has taken place. Times have changed and retail logistics has changed also. Retailers are the channel captains and set the pace in logistics. Having extended their channel control and focused on efficiency and effectiveness, retailers are now attempting to engender a more co-operative and collaborative stance in many aspects of logistics. They are recognizing that there are still gains to be made on standards and efficiency, but that these are

probably only obtained as channel gains (that is, in association with manufacturers and logistics services providers) rather than at the single firm level.



In 1996 Alan McKinnon reviewed and summarized the key components of this retail logistics transformation. He identified six closely related and mutually reinforcing trends:

Increased control over secondary distribution

Retailers have increased their control over secondary distribution (warehouse to shop) by channelling an increasing proportion of their supplies through distribution centres (DCs). In some sectors such as food this process is now virtually complete. British retailers exert much tighter control over the supply chain than their counterparts in most other countries. Their logistical operations are heavily dependent on information technology (IT), particularly the large integrated stock replenishment systems that control the movement and storage of an enormous number of separate products.

Restructured logistical systems

Retailers have reduced inventory and generally improved efficiency through for example the development of 'composite distribution' (the distribution of mixed temperature items through the same distribution centre and on the same vehicle) and centralization in specialist warehouses of slower moving stock. In the case of mixed retail businesses common stock rooms have been developed, where stock is shared across a number of stores, with demand deciding to which store it is allocated.

Adoption of 'Quick Response' (QR)

The aim has been to cut inventory levels and improve the speed of product flow. This has involved reducing order lead-time and moving to a more frequent delivery of smaller consignments both internally (between DC and shop) and externally (between supplier and DC). This has greatly increased both the rate of stock-turn and the amount of product being 'cross-docked', rather than stored at DCs. QR was made possible by the development of EDI (Electronic Data Interchange) and EPOS (Electronic Point Of Sale), the latter driving the 'Sales Based Ordering' (SBO) systems that most of the larger retailers have installed. In other words as an item is

sold and scanned in a shop, this data is used to inform replenishment and re ordering systems and thus react quickly to demand. Sharing such data with key suppliers further integrates production with the supply function. Major British retailers have been faster to adopt these technologies than their counterparts in other European countries, although they still have to diffuse too many small retail businesses.

Rationalization of primary distribution (factory to warehouse)

Partly as a result of QR pressures and partly as a result of intensifying competition, retailers have extended their control upstream of the DC (that is, from the DC to the manufacturer). In an effort to improve the utilization of their logistical assets, many have integrated their secondary and primary distribution operations and run them as a single 'network system'. This reduces waste and improves efficiency.

Increased return flow of packaged material and handling equipment for recycling/reuse

Retailers have become much more heavily involved in this 'reverse logistics' operation. This trend has been reinforced by the introduction of the EU packaging directive. Although the United Kingdom currently lags behind other European countries, particularly Germany, in this field, there remain opportunities to develop new forms of reusable container and new reverse logistics systems to manage their circulation.

Introduction of Supply Chain Management (SCM) and Efficient Consumer Response (ECR)

Having improved the efficiency of their own logistics operations, many retailers have begun to collaborate closely with suppliers to maximize the efficiency of the retail supply chain as a whole. SCM (and within this, ECR) provides a management framework within which retailers and suppliers can more effectively coordinate their activities. The underpinning technologies for SCM and ECR have been well established in the United Kingdom, so conditions have been ripe for such developments. It is clear that many of these trends identified in McKinnon (1996) have been the focus for retailers in the intervening years. Issues such as primary distribution and factory gate pricing, consolidation centres and stockless depots and Collaborative Planning Forecasting and Replenishment (CPFR) have occupied much attention. The overall focus in retail logistics has been altered from an emphasis on the functional aspects of moving products to an integrative approach that attempts to develop end-to-end supply chains. This outcome is normally referred to as supply chain management.

1.7 LOGISTICS' ROLE IN INTERNATIONAL TRADE

Let us discuss the role of logistic in international trade in the following subsections:

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1.7.1 Logistics and International Trade

World markets are not homogeneous and there is still a requirement for local variation in many product categories. Secondly, unless there is a high level of co-ordination, the complex logistics of managing global Supply Chain may result in higher costs. As a result,

The organizations have to offer local markets the variety they seek whilst still gaining the advantage of standardizing global production. Also, they have to manage the links in the global chain from sources of supply to end-user.

The trend of globalization has highlighted the importance of logistics & SC as the keys of profitability. The logistics activity has become further complex due to factors such as:

- Increasing range of products
- Shorter product life cycles
- Marketplace growth
- A number of Supply/Market channels.

Please note that:

A global business does not mean just exports. A global business will typically source its materials and components from more than one country. Similarly, it will have multiple manufacturing locations in many countries.

There are three ways in which businesses have sought to implement their global logistics strategies: Focused Factories, Centralized Inventories and Postponement and localization.

Focused Factories

Under this strategy, the Businesses limit the range and mix of products manufactured in a single location. As a result, the companies achieve considerable economy of scale. Typically, the national oriented business will produce for the local market, whereas the global business unit will treat the whole world as one market, produce fewer products in volumes. e.g., P&G produces 'Pringles' in just two plants.

Some of the crucial trade-offs that are often overlooked are:

- Effect on transport costs & delivery lead-times, especially low value products.
- The need to fulfill some local packaging requirements like printing in different languages.
- Customer may order for variety of products on the same company in a single order and in reality, the products may be delivered from different locations.

Centralization of Inventories

Consolidation of inventory into fewer locations can substantially reduce total inventory held. Organizations have been steadily closing national warehouses and

amalgamating them into Regional Distribution Centers (RDCs) serving a much wider geographical area.

The organizations mostly use the 'square root' rule while implementing this idea.

However, there may be even greater gains by not centralizing and instead holding stocks strategically near the customer / point of production. At the same time, the inventories are managed and controlled centrally. This concept is known as 'virtual' or 'electronic' inventory. This is achieved through the proper use of Information Technology.

Postponement and Localization

This concept recognizes that there are still significant local differences in customers and customer requirements.

Examples:

North Europeans prefer large refrigerators as they shop once in a week whereas South Europeans shop more often and hence, prefer smaller ones. Britons need more freezer space as they consume more frozen foods. Likewise, in case of Washing machines: UK – front loading, France – Top loading.

Hence, the strategy of 'postponement' is being adopted more and more. Postponement or delayed configuration is based on the principle of seeking to design products using common platforms, components or modules and the final assembly or customization takes place at the final marketplace or just when the customer requirement is known.

The advantages are:

- Inventory can be held at a generic level so that there will be fewer stock-keeping variants.
- Because the inventory is generic, flexibility will be greater as the same components can be used in variety of end products.
- Forecasting is easier at the generic level than at the level of finished item.
- The ability to customize locally enables the company to offer variety may be at lower cost.

"Design for localization"

Under this philosophy, products and processes must be designed and engineered in such a way that the semi finished products can be assembled, configured and finished to provide the highest level of variety to customers based on the smallest number of standard components or modules. The final finishing will take place perhaps at a Distribution Center or may even be outsourced to a third party.

The challenge of Global Logistics

The four factors that are critically important are:

1. Extended lead-times of supply
2. Extended and unreliable transit times
3. Multiple consolidation and break bulk options
4. Multiple freight mode and cost options

Extended lead-times of supply

Consolidation of global production into a single/limited number of manufacturing units creates complications like local product variations. Many-a-times, Production tends to add or consider lead-times that are imaginary. In addition, it may be essential to hold inventory between the manufacturing unit & the customer. However, the size of this buffer stock depends on the SC flexibility.

Extended and unreliable transit times

Sea shipments mean long transit times. On the other hand, air-freight takes much shorter time. Also, sea shipment means higher inventory in-transit. Moreover, it seriously constrains the application of the 'Postponement' principle. Further, shipping, consolidation and custom clearance formalities have a bearing too. The extent of trade-off between sea and air shipments decides the mode.

Multiple consolidation and break bulk options

The options are:

Direct ship from each source to final market in full containers. Consolidate in the supply region for final market in full containers. Consolidate from each source for each kind of operation with break bulk / intermediate inventory for specific markets. Consolidate in the supply region and also break bulk.

Multiple freight mode and cost options

Shipping companies offer mixed sea/air services, different container sizes, scheduled and unscheduled services. Use of air freight may seem costly, but when viewed from the angle of inventory holding cost, potential lost revenue and market flexibility may offer a trade-off. A fast catching option is the use of 'door-to-door' transport providers. e.g., DHL, TNT, Fedex, UPS etc. The benefits are: Shorter and more reliable transit times, swifter and less complex customs clearance, worldwide tracking and tracing system etc.

Organizing for Global Logistics

Effectiveness in global logistics can be achieved primarily through a greater element of centralization. At the same time, it may not be possible to avoid localization totally. e.g., sales strategy and promotional and marketing communications strategy.

Thus, one has to achieve a proper balance of global versus local decision-making strategies.

The general principles that have begun to emerge are:

- Structuring and overall control of logistics flows must be centralized to achieve optimization of costs.
- Control and management of customer service must be localized against the requirements of specific markets to ensure that competitive advantage is gained and maintained.

The trend is towards outsourcing and this has enhanced the need for global co-ordination.

A global logistics information system is a must for meeting local service requirements while, at the same time, seeking global cost optimization.

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Check Your Progress

State Whether the Following Statements are True or False

5. Cost advantage is achieved through greater productivity and value advantage is pursued through a different plus over competitive offerings.
6. Retailers have decreased their control over secondary distribution (warehouse to shop) by channelling an increasing proportion of their supplies through distribution centres (DCs).
7. Inventory can be held at a generic level so that there will be fewer stock-keeping variants.
8. A global logistics information system is a must for meeting local service requirements while, at the same time, seeking global cost optimization.

Structure and Control

Only through centralized planning and co-ordination, a Company can hope to achieve the twin objectives of cost minimization and service maximization. For example, any decision regarding location has an affect on the profit/loss. The decision where to manufacture, to assemble, to store, to transship, to consolidate make a vital difference. Hence, organizations have to take decisions from the 'Total Cost' angle.

Customer Service Management (CSM)

Local markets have their own specific characteristics and needs. Therefore, the marketing strategies will have to be local, but within the global guidelines. CSM involves the monitoring of service needs, performance and also, management of the entire order fulfillment process.

Outsourcing and Partnerships

As mentioned earlier, the trend today is towards outsourcing. This not only includes products or materials, but also services. Accordingly, in logistics, activities like provision of transport, warehousing and inventory control are subcontracted. Managing such partners needs a blend of both central and local involvement. Strategic decisions need to be taken centrally while performance appraisals are done locally.

Logistics Information

The information system is the mechanism whereby the complex flows of materials, parts, sub-assemblies and Finished Goods can be coordinated to achieve cost effective service.

A proper system enables the end-to-end visibility of materials, knowing the actual requirements and replenishment in 'real-time'. Time lapses in information lead

to stocks. 'Quick Response' is feasible only through a proper Information System.

The future: The tasks and functions will get separated as follows – Global or Local

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Global

- Network structuring for production and transport optimization.
- Information systems development and control.
- Inventory positioning.

1.8 SUMMARY

In this unit we have discussed about the logistics is a concept which is applicable to moving and storing a physical product in a manufacturing setting as well as in areas as service industries, the armed forces and even environment management. One of the main functions of logistics is to make the goods and services available to the place where there is demand for the product.

Supply chain is the process that is involved from the procurement of raw materials till the outcome as finished products. The logistics and the supply chain management is the two sides of a coin. Supply chain efficiency and agility are both required to improve market share profitability.

The big challenge is to manage the whole logistics system in such a way that orders fulfillment meets or exceeds customer expectations. the two dimensions of logistics are: Macro and micro aspects.

Green Logistics is eco-management of both Forward Logistics and Reverse Logistics. By outsourcing this non-core function, companies gain efficiencies within their forward operations by clearing valuable warehouse space, maximizing internal resources and managing risk associated with regulatory compliance for product disposition.

There are two fundamental competitive strategies, which every organization has to decide to remain unbeaten in the competitive environment. Cost leadership i.e., be the lowest-cost producer in the industry or meaningful differentiation i.e., to differ by competitor in some form, that can be in terms of service like delivery time, delivery reliability etc. or in terms of technical advantages like superior features, superior product etc.

Managing the logistics mix in an integrated retail supply chain, while aiming to balance cost and service requirements, is the essential element of logistics management.

NOTES

1.9 KEY TERMS

- **Logistics:** Logistics is the technique of managing and controlling the flow of goods, energy, information and other resources like products, services, and people, from the source of production to the marketplace.
- **Supply Chain Management:** Supply chain management can be defined as the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage.
- **Forward logistics:** Forward logistics is the process of distribution in connection with the supply chain of goods and services to the end-consumer.
- **Reverse logistics:** Reverse logistics is the process of continuously taking back products and/or packaging materials to avoid further waste disposal in landfills or high energy consumption through the incineration process.
- **Inbound logistics:** Inbound logistics means the movement of materials received from suppliers.
- **Outbound logistics:** Activity associated with collecting storing and physical distribution of the product to buyers.
- **Physical distribution:** Physical distribution refers to movement of goods outward from the end of the assembly line to the customer.
- **Material management:** Material management means the movement of material and components inside a firm.

1.10 ANSWERS TO 'CHECK YOUR PROGRESS'

1. The word, Logistics' is derived from French word 'Loger', which means art of war pertaining to movement and supply of armies.
2. Supply Chain Management' can be defined as the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective and efficient ways possible.
3. Forward logistics is the process of distribution in connection with the supply chain of goods and services to the end-consumer.
4. Reverse Logistics is the process of continuously taking back products and/or packaging materials to avoid further waste disposal in landfills or high energy consumption through the incineration process.
5. True
6. False
7. True
8. True

1.11 QUESTIONS AND EXERCISES

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Short Answer Questions

1. What is Logistics?
2. What are the main components of logistics?
3. Explain the importance of logistics in these days global sourcing.
4. Write short note on supply chain efficiency.
5. Explain the role of logistic in international trade.

Long Answer Questions

1. Briefly explain the dimension of logistics.
2. "Green Logistics as Eco-management of both forward logistics and reverse logistics". Explain.
3. Discuss logistics as a competitive edge driver.
4. Analyze the peculiarities and diversity of needs of Logistics for retailing.

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UNIT 2 LOGISTICS AND PROCUREMENT

Structure

2.0 INTRODUCTION

Case Let: Integrating Sustainability into Nike's Procurement Process

A key element of NIKE, Inc.s corporate responsibility strategy is integrating knowledge and values across our organization. It's a marathon, not a sprint. One example of integration comes from Global Procurement, which sources non-product suppliers for Nike.



Over the past five years, Global Procurement has partnered with several NIKE, Inc. functions to increase the sustainability of the goods and services they buy. The team leverages NIKE, Inc.'s purchasing power by communicating sustainability

objectives to suppliers and potential suppliers, and challenges them to deliver innovative goods and services to meet our objectives.

We think this is an important way to help build markets for more sustainable – and affordable – choices. We saw this dynamic play out in a multi-year project to shift toward more environmentally friendly materials and processes in Nike's retail bag program in the United States. Building on this and other lessons learned, we began evaluating the CR performance of current and prospective suppliers.

When we began looking into improving the sustainability of retail bags, we first awarded business only to printers that were third-party certified by the Forest Stewardship Council (FSC). At that time, FSC-certified paper was available but too costly. We encouraged printers to work on Nike's behalf to find acceptable FSC-certified materials.

Through these projects, we learned that one of our biggest challenges has been a lack of common indicators to evaluate potential suppliers. Though each category and project has unique attributes, we needed a consistent process for ranking suppliers' sustainability performance in order to fairly and systematically integrate sustainability as a factor in our procurement process.

Source: *http://www.icmrindia.org*

In the previous unit, we dealt with the concept of logistics and supply chain. The unit also discussed about the dimension of logistics, supply chain contours, logistics as a competitive edge driver, peculiarities and diversity of needs of logistics for retailing and logistics' role in international trade. In this unit, we will deal with concept of procurement and how logistics as a support function of procurement and vendor facilitation.

This unit will also helps you to understand the logistics as interface function of demand forecasting, global procurement, tracking inward shipments and storage planning and logistics as an enabler of just-in-time, kanban, vendor managed inventory. To make the learning easier, we will take the help of globally recognized best practices.

Procurement is a key activity in the supply chain. It can significantly influence the overall success of an emergency response depending on how it is managed. In humanitarian supply chains, procurement represents a very large proportion of the total spend and should be managed effectively to achieve optimum value. Procurement works like a pivot in the internal supply chain process turning around requests into actual products/commodities or services to fulfill the needs. It serves three levels of users:

1. The internal customer.
2. Programs in response to emergencies and ongoing programs.
3. Pre-positioning of stocks, for both internal customers and program needs.

Procurement's historical focus in many organizations was to achieve the lowest possible cost from potential suppliers. Oftentimes these suppliers were pitted against each other in "cutthroat" competition involving three- or six-month length contracts awarded to the lowest bidder. Once this lowest bidder was chosen, the billing cycle would almost immediately start again and another low bidder would get the contract for the next several months. Today procurement has a much more strategic orientation in many organizations, and a contemporary procurement manager might have responsibility for reducing cycle times, playing an integral role in product development, or generating additional revenues by collaborating with the marketing department.

2.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand the logistics as a support function of procurement and vendor facilitation
- Discuss logistics as interface function of demand forecasting
- Explain global procurement
- Learn tracking inward shipments and storage planning
- Know logistics as an enabler of Just-In-Time
- Discuss Kanban
- Identify vendor managed inventory for vendors and the firm.

2.2 LOGISTICS AS A SUPPORT FUNCTION OF PROCUREMENT AND VENDOR FACILITATION

Procurement refers to the raw materials, component parts, and supplies bought from outside organizations to support a company's operations. It is closely related to logistics since acquired goods and services must be entered into the supply chain in the exact quantities and at the precise time they are needed. Procurement is the process of identifying and obtaining goods and services. It includes sourcing, purchasing and covers all activities from identifying potential suppliers through to delivery from supplier to the users or beneficiary. The aim and objective of procurement is to carry out activities related to procurement in such a way that the goods and services so procured are of the right quality, from the right source, are at the right cost and can be delivered in the right quantities, to the right place, at the right time.

Procurement must be seamlessly integrated with the other aspects of Logistics and functions within the organisation, such as Warehousing, Distribution, Finance, HR, etc. An integrated approach to service delivery will no doubt contribute to the timely, efficient and effective delivery of humanitarian assistance.

Clear communication lines, timely flow of documentation and constant feedback will facilitate the procurement process. The involvement of the logistics function in assessments will enable logistics to plan for the delivery of services, but for logistics to succeed, the procurement plan must be well integrated and visible in the overall response plan. In emergency situations, easily accessible logistics preparedness and response guidelines will help to fast track the development of a response plan, tailored for a specific situation.

The aim and objective of procurement is to carry out activities related to procurement in such a way that the goods and services so procured are of the right quality, from the right source, are at the right cost and can be delivered in the right quantities, to the right place, at the right time. Meeting the following objectives of procurement enables the Logisticians to fulfill the "Six Rights":

- buy quality materials, items and services economically from reliable sources;
- ensure timely delivery through the selection of capable and efficient suppliers;
- continuously locate, evaluate and develop economical and reliable supply sources;
- identify the most reliable sources of supply through either open tender, multi-stage tendering (pre-qualifying suppliers and retaining only those that are capable of meeting the organization's requirements — strategic sourcing) and limited tendering;
- investigate the availability of new materials and monitor trends in market prices;
- buy in accordance with organisations policies;
- estimate, position and monitor appropriate levels of stocks based on estimated needs, operational policy, objectives and priorities, estimated time for replenishment and availability of funds; and
- participate in planning and coordinating purchasing needs across all central procurement teams and the field in order to reduce administration and make the best use of money spent.

It is important to recognize that the 'Six Rights' are interrelated and may influence each other but do not carry the same weight depending on the situation. For example, in an emergency situation it may be possible to obtain the right quantity but not at the right price. There may be competition for certain goods, so to get the quantities required may mean paying a slightly higher price.

In collaboration with the warehouse function, products/commodities are mobilized and delivered.

Procurement is a large subject area and bridges the fulfillment of identified needs. The objective of this topic is to highlight the key areas, provide tools, templates and hyperlinks to additional information such as donor guidelines should that is required.

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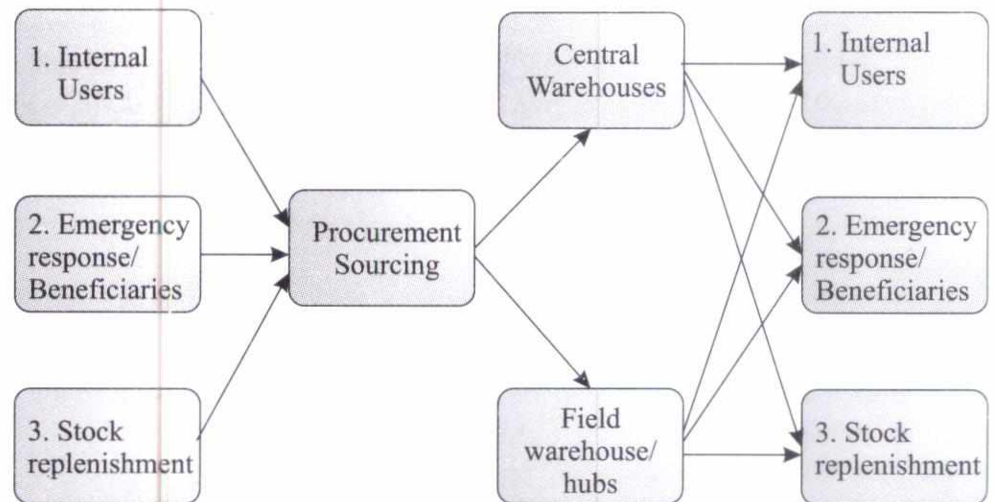


Fig. 2.1: The role of procurement

Process, in the context of procurement, is organisation specific and based on organizational policies and donor requirements. The intention here is to provide industry best practice that can be replicated or used to complement what is already in existence or adopted in totality where no guidelines exist.

Procurement Policies

Procurement policies will vary from organisation to organisation but are the organizational rules and regulations governing the procurement function. The policies determine how different aspects of procurement will be carried out in the organisation and how people working in procurement should behave. In summary, they;

- provide general and specific guidelines for managing the buying of items and services;
- establish a purchasing criteria and decision making process, ensure that implementing staff are well trained;
- provide specific guidelines for establishing and managing relationships with external entities in relation to procurement;
- encourage and enhance internal control measures;
- act as a management tool for better decision-making and better stewardship of the resources entrusted to organisations by its donors.

2.2.1 Procurement in the Humanitarian Context

The three important principles of humanitarian logistics procurement are:

- transparency – all phases in the procurement process are fair and accurately documented;
- accountability – accountability to donors who may require certain rules to be followed when using the money they have provided;

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- efficiency and cost effectiveness – meeting the six rights of supply; price, right time, right quantity, quality services, delivery to the required places and from the most cost effective source.

The principles and their importance stem from three key facts:

- that the resources utilised are usually funded by donor;
- that transparency contributes to the establishment of sound and reliable business relations with suppliers; and,
- that efficiency and cost effectiveness has a direct impact on operations and ultimately on beneficiaries.

The Procurement function must guard and militate against risk, understand the market, build relationships with suppliers, meet needs in a timely manner and constantly monitor performance to improve service provision. Therefore, the need for an organisation to have clearly defined policies that are well understood.

2.2.2 Procurement Process

Logistics staff participation in assessments provides logistics information and data that supports program/response implementation. This enables the logistics function to know and understand program or response needs. The organisation is then able to plan ahead for the provision of the goods and services. The assessment results feed into procurement plans. In an emergency situation, the participation of logisticians will inform management on the feasibility of a response to physical needs.

For emergency response purposes the procurement process can be wrapped into four clear steps:

- needs identification;
- specify;
- sourcing, awarding and placing orders;
- supplier management to facilitate timely delivery.

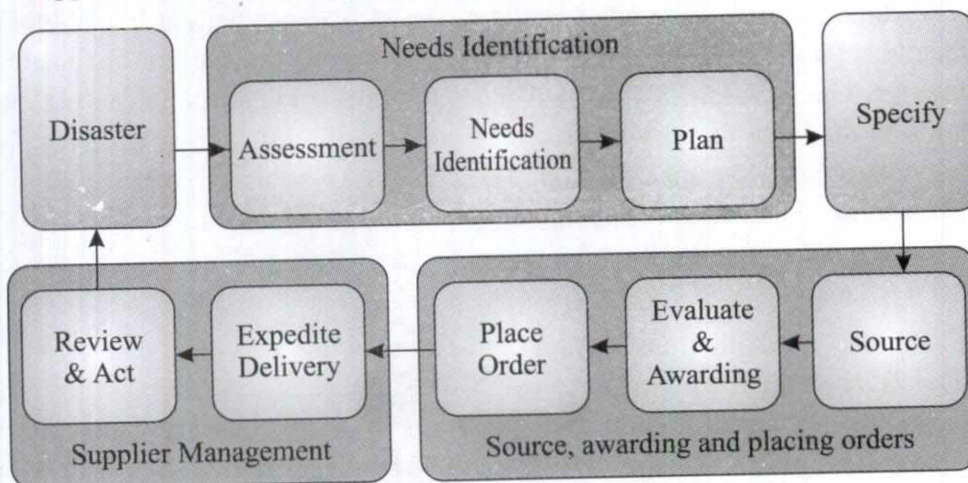


Fig. 2.2: Procurement process

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Need

Requirements for goods and services originate from different users. In emergencies, the response teams in various sectors request for basic supplies to meet the needs of those affected. The needs range from blankets, mosquito nets, tents to food supplies, household items, etc.

The needs are communicated to procurement in the form of a "request". These requests may be electronic, hard copy or verbal, and may be very specific where the users know exactly what they need in terms of specification, quantities, and delivery details. Or they may be less specific where the users are not able to provide exact information.

In emergencies the requests are sometimes verbal or done on email communication. In whatever form, the needs must be clear, unambiguous and confirmed by the originator of the request. The specifications should contain the essential features or characteristics of the requirements but must not be over or understated or contain non-essential features that might limit the sources of supply or limit the number of potential suppliers. Assessments inform needs identification.

Plan

Once the needs have been identified and forwarded to Procurement in a request form (see different purchase order requisition templates in the Annexes), the procurement department should develop or communicate a plan on how to deliver the service or goods required. But the plan must be developed in collaboration with the other functions within the organisation, so that it is integrated into the organization's strategy and therefore provided for adequately.

Specify

To be able to purchase the right goods or services, the specifications of what the user/beneficiary needs must be clear. These specifications are used to communicate to the supplier what is needed and what should be supplied. It is therefore important to have clear, precise and accurate specifications. Most organizations have standard specifications for the most regularly procured items and services such as medical and construction. One example is of Inter-Agency working groups who have developed standards to facilitate the establishment of common framework agreements. The customers determine the specification. There is, however, an important role to be played by those responsible for purchasing the goods or services.

What makes a good specification?

Specification is a detailed description of the design, the service, or materials. It describes in detail the requirements to which the supplies or services must conform. The basic requirement of a good specification is to clearly identify the service or product to stakeholders. The specifications must be clear to all parties. That is the user, Procurement and the supplier.

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Factors to consider in specifying a product:

- physical attributes
- technical specification
- intended use
- technical specifications

Care must be taken not to specify a specific product so as to limit competition.

Source

Method

Some of the methods of purchasing or obtaining goods and services for an emergency are:

- drawing from existing stocks within the organisation;
- cash purchases on approval;
- calling-offs from existing — supply/framework agreements/long term agreements;
- ordering from a sole/single source, multiple sources, supplier, alliances/partnerships; these could be local or international purchasing;
- purchasing from the open market on a quick request for quotation with request for short turn-around;
- in preparation for slow-on-set or for complex emergencies, purchase from the open market through an open invitation to tender;
- other agencies'/organisations' donations; and
- borrowing from stock held by other agencies/organisations in the UNHRD network.

Process

Sourcing is the process of identifying sources of supply that can meet the organisations immediate and future requirements for goods and services. In an emergency situation the immediate needs would be priority consideration. Under the circumstances, identifying sources of supply and accessing supplier capabilities will either be carried out as users' place their requests to Procurement or once a request has been received.

The sourcing process adopted will depend on the situation and on the time available to carry out sourcing.

In response to a slow onset emergency, stock-piling may take place before specific requests are made.

In a sudden on-set emergency the need to respond quickly to the emergency will mean there is no time to gather sourcing information and approve suppliers before customers start to place requisitions. The organisation would then call-off

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on existing stocks or purchase short term requirements off the local market for the initial days or order from existing agreements.

Vendor performance

Vendor rating and supplier performance monitoring are applicable to all scenarios for quality service delivery. These aspects should be built into on-going business. For emergencies, performance monitoring is limited to delivery and quality of goods. Though vendor rating is applicable in emergencies, the criteria may vary from one that is used in the long term arrangements. For example, ability to deliver immediately may carry more weight than the price, provided the price variation is not too big.

Factors to consider in vendor rating:

- vendors' legal status;
- price and cost;
- quality of goods;
- service record;
- availability of goods;
- ability to deliver in time;
- good communication; and
- availability of a clearly identified focal point.

Some sources of supply information are:

- catalogues and brochures;
- trade directories;
- the internet, exhibitions, trade journals, government offices;
- other people involved in procurement;
- other organisations, other humanitarian organisations;
- supplier records, request for information/requests of expression of interest;
- existing approved supplier databases; and
- procurement agents.

2.3 LOGISTICS AS INTERFACE FUNCTION OF DEMAND FORECASTING

In this section we provide brief descriptions of demand forecasting methods and their application. A demand forecasting is the prediction of what will happen to your company's existing product sales. It would be best to determine the demand forecast using a multi-functional approach. The inputs from sales and marketing, finance, and production should be considered. The final demand forecast is the consensus of all

participating managers. You may also want to put up a sale and operations planning group composed of representatives from the different departments that will be tasked to prepare the demand forecast.

Demand forecasting is the area of predictive analytics dedicated to understanding consumer demand for goods or services. That understanding is harnessed and used to forecast consumer demand. Knowledge of how demand will fluctuate enables the supplier to keep the right amount of stock on hand. If demand is underestimated, sales can be lost due to the lack of supply of goods. If demand is overestimated, the supplier is left with a surplus that can also be a financial drain. Understanding demand makes a company more competitive in the marketplace. Understanding demand and the ability to accurately predict it is imperative for efficient manufacturers, suppliers, and retailers. To be able to meet consumers' needs, appropriate forecasting models are vital. Although no forecasting model is flawless, unnecessary costs stemming from too much or too little supply can often be avoided using data mining methods. Using these techniques, a business is better prepared to meet the actual demands of its customers.

Demand forecasting is a highly complicated process as it deals with the estimation of future demand. It requires the assistance and opinion of experts in the field of sales management. Demand forecasting, to become more realistic should consider the two aspects in a balanced manner. Application of commonsense is needed to follow a pragmatic approach in demand forecasting. In demand forecasting, as with most analysis endeavors, data preparation efforts are critical.

Data is the main resource in data mining; therefore it should be properly prepared before applying data mining and forecasting tools. Without proper data preparation, the old adage of "garbage in, garbage out" may apply: useless data results in meaningless forecast models. Major strategic decisions are made based on the demand forecast results. Errors and anomalies in the data used to create forecast models may impact the model's ability to forecast. These errors give rise to the potential for bad forecasts, resulting in losses. With properly prepared data, the best possible decisions can be made.

Current Company Demand = Current Market Demand × Current Market Share

How can future market demand and company demand is forecast?

Very few products or services lend themselves to easy forecasting. These tend to involve a product whose absolute level or trend of sales is fairly constant and where competition is either non-existent (e.g. monopolies such as public utilities) or stable (pure oligopolies). In most markets, total demand and company demand are not stable – which makes good demand forecasting a critical success factor.

Determination of the demand forecasts is done through the following steps:

- Determine the use of the forecast

- Select the items to be forecast
- Determine the time horizon of the forecast
- Select the forecasting model(s)
- Gather the data
- Make the forecast
- Validate and implement results

The basic approach to forecasting demand:

- Understand the objectives of forecasting
- Integrate demand planning and forecasting
- Identify major factors that influence the demand forecast
- Understand and identify customer segments
- Determine the appropriate forecasting technique
- Establish performance and error measures for the forecast

2.3.1 Forecasting Consumer Demand

Analysis Tools

A wide variety of analysis tools can be used to model consumer demand — from traditional statistical approaches to neural networks and data mining. Using these demand models enables estimation of future demand: forecasting. Possibly, a combination of multiple types of modeling tools may lead to the best forecasts.

Time series analysis is a statistical approach applicable for demand forecasting. This technique aims to detect patterns in the data and extend those patterns as predictions. The ARIMA model, or Autoregressive Integrated Moving Average, in particular is used both to gain understanding of the patterns in data and to predict in the series. Different parameters are used to detect linear, quadratic, and constant trends.

Other approaches for building forecast models are Neural Networks and Data Mining, which are capable of modeling even very complex relationships in data. Demand forecasting is a very complex issue for which these methods are well suited. Multilayer Perceptions and Radial Basis Function neural networks, Multivariate Adaptive Regression Spines, Machine Learning, and Tree algorithms can all generate predictive models for this application.

Systematic Patterns vs. Trends

Generally, demand patterns consist of some basic classes of components, seasonality, and trend. Seasonality refers to the portion of demand fluctuation accounted for by a reoccurring pattern. The pattern repeats systematically over time. Trend is the portion of behavior that does not repeat. For example, a trend may show a period of growth followed by a leveling off. In retail sales, seasonality will likely find patterns

that repeat every year. With sufficient data, other seasonality trends may manifest across multiple years.

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Forecasting Techniques

Once adequate predictive models are found, these models can then be used to forecast demand. A demand forecast model may actually be an ensemble of multiple models working together. This technique of combining models often results in better predictive accuracy. When one model gets off track, the ensemble as a whole counteracts.

As more data accumulate about consumer behavior, demand forecast models should be updated. This will be a continual effort monitoring and modeling demand in order to be constantly aware of changes. Failing to update forecast models and take advantage of all the information available will likely prove to be a costly mistake.

Inventory Management

Using up-to-date demand forecast models, inventory management becomes a much simpler task. The forecast models offer insight into when shifts will occur, but more importantly, how big the shift will be. Using demand forecast models; inventory and human resources can be properly planned and managed well in advance and with fewer surprises.

Demand forecasting activity is carried on in conjunction with the firm's marketing staff and is used to obtain a better idea of the logistic needs of the next planning period. These needs include both delivery to customers and receipt of raw materials or components for assembly. Because the logistics staff is involved with order processing, it also has early information about what customers are actually ordering. This is important intelligence for others in the firm who are planning and scheduling production.

2.4 GLOBAL PROCUREMENT

In a global economy, international procurement is a term used to describe the process of allowing firms around the world to bid on contracts for goods and services. The concept has gained popularity as shipping and transportation costs have decreased due to an influx of cheap, readily available fuel. The globalization of large corporations has allowed them to reap the benefits of lower labor and materials costs while still selling the same quality and quantity of products.

There are three primary benefits to international procurement: lower costs, stimulation of a global economy, and increased consumer base. The lower costs that can be achieved through purchasing services or goods from other countries are derived from currency valuation and the effects of product specialization. Both of which are core concepts in economics.

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In international procurement, industrialized nations purchase goods from countries with a lower dollar, gaining in the currency exchange. This rate varies over time, but the multiplying factor remains fairly static. The ability to purchase more with a dollar in another nation is one of the primary driving factors behind the appeal of this type of procurement.

Product specialization is the basic concept that some items have a lower cost of production, based on the natural or human resources available in different locations. Specializing in this area allows a particular national economy to offer that product or service at a lower cost that other economies, resulting in increased customers and more economic opportunities. Typical examples of this include produce that is native in one country or region, but is more expensive to produce in another.

In order to build a global economy, each nation must have some contribution or basket of goods that they can offer to potential customers. If a country is limited to just the goods that it can produce internally, then it either needs to invest significant government spending to meet every need or leave those needs unfilled. A country with no natural oil can build an oil drilling mechanism, but would be unable to use it. Ideally, market forces attract customers to the lower prices and higher quality of the products provided by the different nations.

The hidden benefit of international procurement is the increased customer base. As more goods and services are purchased from other countries, the wealth of those economies increases. This creates the capacity for increased spending, allowing customers and businesses to purchase goods and services. Effectively increasing the customer base then encourages more spending and growth, fueling the economic cycle.

2.5 TRACKING INWARD SHIPMENTS AND STORAGE PLANNING

Real-time tracking of shipment information helps in keeping operations on schedule and customers happy. Various shipment tracking technologies helps in tracking shipments on all modes of transportation by some known reference value. Flight and vessel details, their sailing details, schedules, bills of lading and custom documents must be processed in a timely manner in order to move freight successfully. However, even today the procedure for freight movement is very tedious. Besides recent reports by the economic and social commission for western Asia says the clearance of goods through ports and customs, on an average involves 40 steps and 20 signatures. Again various bottlenecks are presented numerous sources of error in effective handling of freight. However, with the advent of newer technologies like EDI, RFID and GPS tracking systems are revolutionary technologies in tracking shipments.

Check Your Progress

1. State the meaning of term procurement.
2. What is the significance of procurement policies?
3. What do you mean by goods specification?
4. Define the term sourcing.

2.5.1 Beyond Basic Bar Code

Bar codes are used to identify the contents of package and provide information on the product as well as the package. Bar coding and electronic scanning are hardware-cum-software identification technologies facilitate logistics information collection and exchange. Bar coding refers to the placement of computer readable codes on items, cartons, containers, trucks and even railway wagons. The scanning process is the "eye" of a bar code system. A scanner optically collects bar code data and converts them to usable information.

These technologies are auto identification (ID) systems. The Universal Product Code (UPC) is present on many consumer products and is used extensively in the consumer goods industry for retail checkouts. UPC is a ten digit number which assigns a unique five-digit number identification to each manufacturer and product. The lines and spaces of a bar code are of varying thicknesses and printed in different combinations. When there is accurate printing and adequate contrast between the bars and spaces, the codes can be scanned and converted into useful information. Standardized bar codes reduce errors when receiving, handling, or shipping product. Figure 2.3 is a bar code of a series of numbers encoded in UPC.

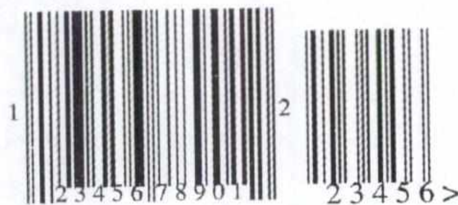


Fig. 2.3: A UPC bar code

UPC bar codes have been successfully accepted by retailers who are concerned with individual items, shippers and carriers are interested in the contents of pallets or containers. In addition to product or package identification, it also enhances the efficiency of product storage and retrieval. Some other logistics applications for bar coding include coding of trucks and railway wagons, etc.

A bar code is an optical machine-readable representation of data. Originally, bar codes represented data in the widths (lines) and the spacing of parallel lines, and may be referred to as linear or 1D (1 dimensional) bar codes or symbologies. They also come in patterns of squares, dots, hexagons and other geometric patterns within images termed 2D (2 dimensional) matrix codes or symbologies. Although 2D systems use symbols other than bars, they are generally referred to as bar codes as well.

Barcodes can be read by optical scanners called bar code readers, or scanned from an image by special software. In Japan, most mobile phones have built-in scanning software for 2D codes, and similar software is becoming available on smart phone platforms.

The importance of bar coding to supply chain management is incontestable. And since other technologies are presenting an improvement over bar codes and

offers fundamental value in the form of greater productivity, labour savings and better data and inventory accuracy. In today's hyper-competitive business climate, it's increasingly important to seize opportunities of this magnitude. It also is true that companies are experiencing diminishing levels of return from bar code-based systems. In many organizations, bar codes are commonplace. However, they will always be subject to error and convenience issues, and the finite costs associated with bar code scanning will always limit the granularity of gathered information (see Figure 2.4). Bar code systems cannot deliver the ever-increasing returns enjoyed in previous decades.

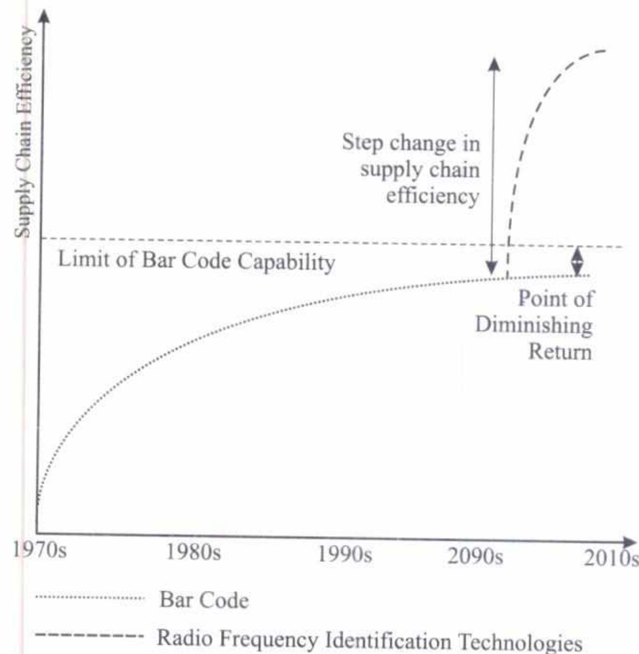


Fig. 2.4: Bar code systems

2.5.2 Introduction to EDI

Electronic Data Interchange or EDI is a standardized method for transferring data between different computer systems or computer networks. It is commonly used for e-commerce purposes, such as sending orders to warehouses, tracking shipments, and creating invoices. Because many online retailers sell products that they do not physically stock, it is important to have an easy way to transfer order information to the locations where the goods are stored. EDI makes this possible. Some common EDI formats include X12 (U.S.), TRADACOMS (U.K.), and EDIFACT (International).

Therefore lack of specific data or variation in shipping information resulted in delays and failed shipments. Introduction of innovative tracking techniques like EDI offers the ability to resolve much such inefficiency due to erroneous documentations.

In EDI all data is communicated between the Carrier, Shipper, and the Consignee in electronic documents called "Transaction Sets" (TS). The advantage of this method is that it eliminates a Dispatcher from having to key information into the Dispatch and Billing System. This results in a savings of time and money and eliminates any data entry mistakes.

The responsible parties have several ways to enter status information, including an automated EDI process. Status information is used to create reports on in-process shipments and carrier performance. Shippers can also elect to view real-time exception reports.

Extensive drill-down capabilities allow seeing all information pertaining to a shipment down to the detailed line level of the orders.

2.5.3 Advantages of EDI Tracking

- Various ways to search for information (by bill of lading, order number, PO number, ship-to name, carrier, etc.)
- Ability to identify hundreds of shipments in seconds
- Real-time shipment information is available immediately upon export from the High Jump Transportation Management system.
- Ability to view shipment status with automatic updates from carriers using EDI shipment status message.
- Ability to hyperlink directly to a carrier's website for real-time visibility of EDI information.

2.5.4 Introduction to RFID and its Applications

Radio-Frequency Identification (RFID) is the use of an object (typically referred to as an RFID tag) applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

Most RFID tags contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a Radio-Frequency (RF) signal, and other specialized functions. The second is an antenna for receiving and transmitting the signal.

European aircraft manufacturer Airbus received 'The Best RFID implementation' award in May 2008. The award was given for the successful implementation of RFID technology in its operations with an objective to improve the company's operational efficiency.

- Airbus, a leading aircraft manufacturer in the world, had a complex supply chain including multiple assembly plants and thousands of suppliers. The company followed a principle of continual improvement of its operations.
- Airbus' efforts to improve its operating efficiency included projects like Sup@irWorld and implementing RFID across its own as well its suppliers' operations.

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- Airbus started using RFID in its operations way back in 1997. It applied this technology in its tool loan business where it used to lend certain tools to its customers that were required for maintenance of the aircraft.

There are generally three types of RFID tags: active RFID tags, which contain a battery and can transmit signals autonomously, passive RFID tags, which have no battery and require an external source to provoke signal transmission, and Battery Assisted Passive (BAP) which require an external source to wake up but have significant higher forward link capability providing great read range.

RFID systems can be used just about anywhere, from clothing tags to missiles to pet tags to food – anywhere that a unique identification system is needed. The tag can carry information as simple as a pet owners name and address or the cleaning instruction on a sweater to as complex as instructions on how to assemble a car. Some auto manufacturers use RFID systems to move cars through an assembly line. At each successive stage of production, the RFID tag tells the computers what the next step of automated assembly is.

RFID is in use all around us. If you have ever chipped your pet with an ID tag, used EZPass through a toll booth, or paid for gas using SpeedPass, you've used RFID. In addition, RFID is increasingly used with biometric technologies for security.

Unlike ubiquitous UPC bar code technology, RFID technology does not require contact or line of sight for communication. RFID data can be read through the human body, clothing and non-metallic materials.

One of the key differences between RFID and bar code technology is RFID eliminates the need for line-of-sight reading that bar coding depends on. Also, RFID scanning can be done at greater distances than bar code scanning. High frequency RFID systems (850 MHz to 950 MHz and 2.4 GHz to 2.5 GHz) offer transmission ranges of more than 90 feet, although wavelengths in the 2.4 GHz range are absorbed by water (the human body) and therefore has limitations.

2.5.5 RFID Components

- A basic RFID system consists of three components:
- An antenna or coil
- A transceiver (with decoder)

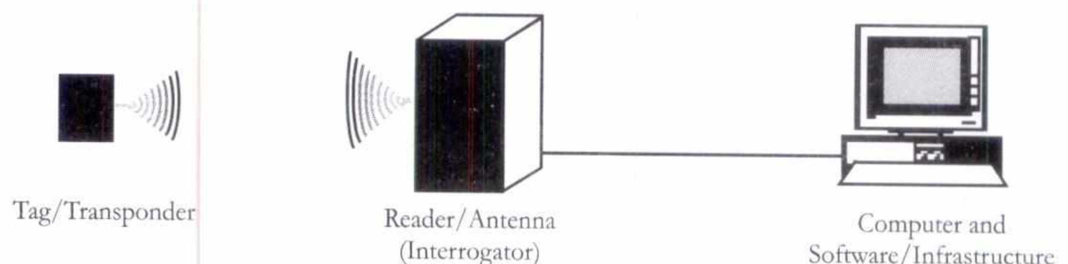


Fig. 2.5: RFID components

- A transponder (RF tag) electronically programmed with unique information.
- The antenna emits radio signals to activate the tag and to read and write data to it.
- The reader emits radio waves in ranges of anywhere from one inch to 100 feet or more, depending upon its power output and the radio frequency used. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal.
- The reader decodes the data encoded in the tag's integrated circuit (silicon chip) and the data is passed to the host computer for processing.

The purpose of an RFID system is to enable data to be transmitted by a portable device, called a tag, which is read by an RFID reader and processed according to the needs of a particular application. The data transmitted by the tag may provide identification or location information, or specifics about the product tagged, such as price, color, date of purchase, etc. RFID technology has been used by thousands of companies for a decade or more. RFID quickly gained attention because of its ability to track moving objects. As the technology is refined, more pervasive – and invasive – uses for RFID tags are in the works.

A typical RFID tag consists of a microchip attached to a radio antenna mounted on a substrate. The chip can store as much as 2 kilobytes of data.

To retrieve the data stored on an RFID tag, you need a reader. A typical reader is a device that has one or more antennas that emit radio waves and receive signals back from the tag. The reader then passes the information in digital form to a computer system.

Compared to traditional bar code-based systems, RFID-based data-capture systems have many advantages.

- RFID tags: Either active (with on-board battery) or passive
- RFID readers: To activate and read information on the tags
- Communication technologies: To move captured information
- Information processing systems: To store, compile, parse, interpret, and analyze transmitted information.

2.5.6 Introduction to Global Positioning System (GPS)

Sometimes a problem will arise if a company receives orders / orders on how big are to manage them? To overcome this problem, many shipping companies offer a way to track the shipment via the GPS tracking system. This system allows knowing about the status of goods that are sent each time.

This GPS tracking system used by most shipping companies. Most vehicles they are equipped with GPS equipment and software that enable customers to check the delivery status of their products based on GPS data.

When the delivery company received orders to use their services, one of the things that are important and need to give information to their clients is of course,

the reference number and information when the vehicle carrying the goods. With this, customers can find information about their products because the company delivery will provide a ticket number to track the impact of their products. Shipping companies that use GPS tracking system should be constantly updating the number of data for status delivery of an item.

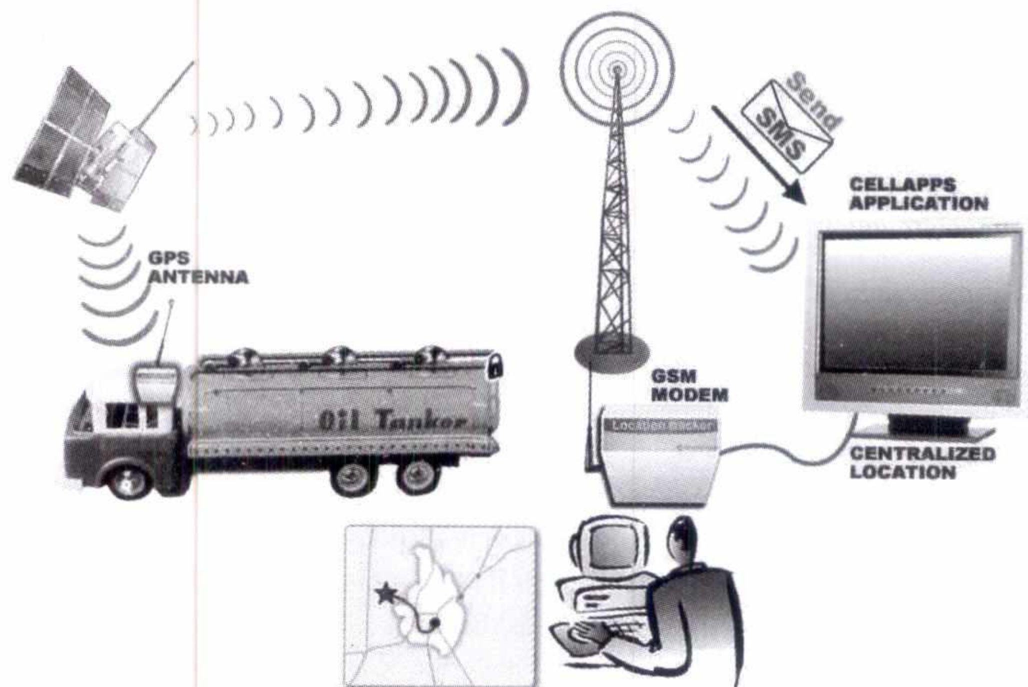


Fig. 2.6: GPS tracking system

All items are sent using delivery companies will be attached to the special code labels. When a customer wants to know the status of their shipment, they just need to sign in to the website provided by the shipping company and enter the code. This GPS system will reflect the status of their delivery. This method is considered more safe and secure.

Different models of GPS device are available

To help shippers, retailers, transportation and logistics providers reduce cargo theft and increase supply chain security. The smaller, lightweight version of the product can be used to track and recover vehicles, boats and pets, as well as monitor teen drivers, protect toddlers and track senior citizens.

2.6 LOGISTICS AS AN ENABLER OF JUST-IN-TIME (JIT)

Just-in-time (JIT, often known as Kaizen) is a Japanese system of inventory reduction (inventory is classified as a waste in the JIT system), continuous improvement, and the synchronization of material flows from within the organization and eventually including the organization's immediate suppliers and customers. Some JIT techniques

- A transponder (RF tag) electronically programmed with unique information.
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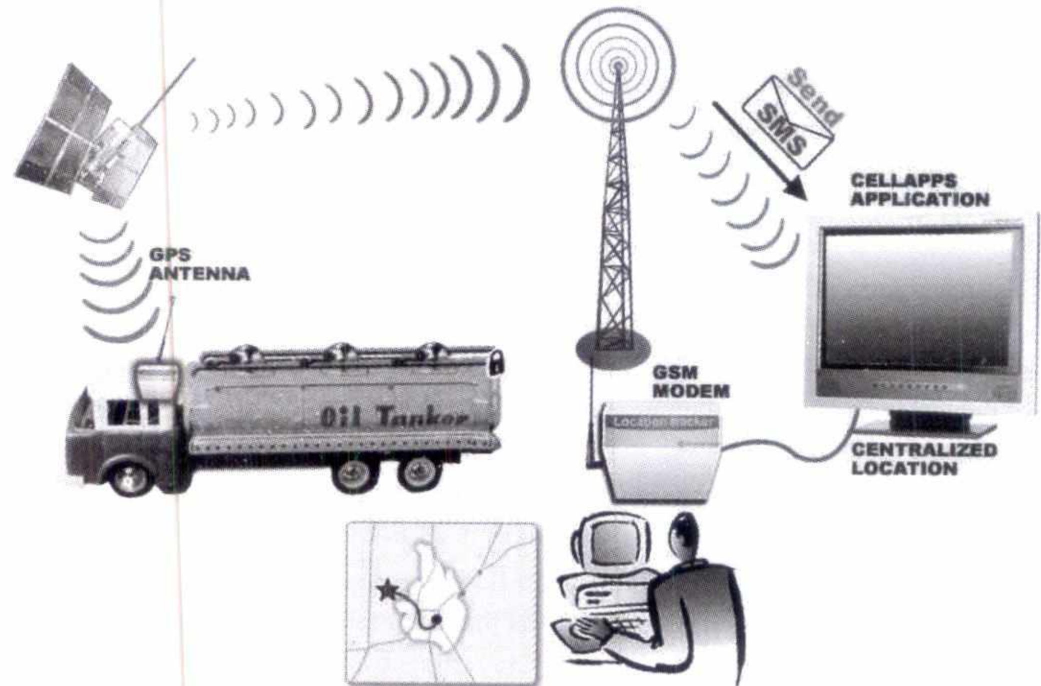


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are discussed under the heading 'Continual Improvement' in the Chapter on Quality.

In a sense, JIT emphasizes the concepts of supply chain management which is to balance the flow of materials with customer requirements throughout the supply chain, such that costs, quality, and customer service are at optimal levels. JIT works with suppliers to remove waste, reduce cost, and improve quality and service.

JIT, like supply chain management, encourages cross training, satisfying internal customer demand, moving products through the production system quickly, communicating end-customer demand forecasts and production schedules up the supply chain, and seeks to optimize inventory levels across the entire supply chain.

Many firms do not implement all of these activities but, rather, select JIT elements based on resources, product characteristics, customer needs, and supplier capabilities. In a survey by Industry Week, in 2001, senior manufacturing executives of 71 percent of the companies surveyed in the US admitted to practicing some form of JIT with supply chain management.

JIT considers inventories a costly waste. Inventories hide purchasing, production, and quality problems within the organization, just as water hides boat-damaging rocks beneath its surface, according to the JIT philosophy. The solution lies in reducing inventory so that just as reducing water levels cause rocks to become detectable and the problems surface. Once these problems are detected, the value-damaging problems can be solved, improving product costs, quality, and service that allow the system to run more efficiently.

For example, if reduction of safety stocks cause supply disruptions due to late deliveries, firms can then either find a way to resolve the problem with the supplier or find a better supplier. Either way, the end result is a smoother running organization with less inventory investment. Similarly, if production machinery is properly maintained and breaks down less often, less safety stock is needed to keep downstream production equipment fed with parts to be further processed.

The way to reduce inventory levels is to reduce purchase order quantities and production lot sizes. The arithmetic is simple, lot sizes when cut into half will also reduce average inventories in half, if the usage is constant. Therefore, the focus of manufacturing companies is towards more flexibility in terms of changing production runs. The number of setups, therefore, increases. Firms have to find ways to reduce setup times. This can be done in a number of ways including doing setup preparation work while the previous production lot is still being processed, moving machine tools closer to the machines, improving tooling or die couplings, standardizing setup procedures, and changing to machines that require less setup time.

Reducing purchase order quantities also means that the firm must make more purchase orders. Ordering costs must be reduced (automated purchasing processes using electronic data interchange (EDI) and the Internet). For example, companies

now are developing virtual inventory systems that allow distributors to feed their inventory information into one shared database, allowing small buyers to order in a JIT environment from distributors offering the quickest response times.

In developing JIT partnerships with suppliers, a firm identifies its best suppliers and begins to-offer these suppliers training and a greater share of the firm's purchases. This allows the firm to use purchasing leverage to obtain better service and quality assurances. Suppliers locate production or warehousing facilities close to these customers and make frequent small deliveries of finished product to their points of use within the facility. The promise of greater quantities to be purchased makes this, as well as improved performance, possible. These mutual dependencies and mutual benefits that occur among all of these JIT partnerships result in increased product value and competitiveness for all of the partners.

Finally, the concept of continual improvement becomes operative. Once inventories have been reduced and the problems uncovered and solved, the firm can reduce inventories still further by uncovering yet another set of problems to be solved. Thus with each iteration, the firm runs leaner, cheaper, faster, and with higher levels of product quality. There are many examples of JIT in Indian industry. This technique is particularly popular in the automotive sector and Maruti Udyog has taken a lead.

2.7 KANBAN (A SCHEDULING SYSTEM FOR LEAN INVENTORY)

Kanban is a Japanese word that means "signboard". This is a term that has become synonymous with "Demand Scheduling" or "Just in Time (JIT) Manufacturing". Its roots are traced to the early days of Toyota's innovative production system of the late 1940s and early 1950s. Kanban was developed to control production between processes and to implement Just in Time Manufacturing. The ideas of Kanban became popular during the global recession of the 1970s, when it was important for companies to reduce waste and cut costs in order to succeed.

The premise of Kanban is to create Visual Indicator's to allow the operators to be the ones who determine how much of a product to run and when to stop or change over. Kanban rules also tell the operators what steps to take when they have problems and whom to go to when the problem occurs. Operators then produce based on actual usage, rather than forecasted usage. They only produce new product to replace the product consumed by its consumer(s), and immediate next process. They only produce products based on visual signals sent by its customer(s). Since the majority of the decisions in a kanban are being made by the operators, the use of visual indicators also allows managers and supervisors to see the schedule status of a line at a glance. The kanban schedule replaces the traditional daily or weekly production schedule. It replaces this schedule predetermined rules that allow production operators to schedule

in the line. Kanban scheduling can be looked at, as an execution tool, rather than a planning tool. It directs production on a day-to-day basis. Kanban does not replace planning completely. Material planning information is used to create the kanban, but kanban does replace the daily scheduling activities necessary to operate the production process. It also eliminates the need for production planners and supervisors to continuously monitor schedule status. In addition to freeing up material planners, schedulers and supervisors, it also empowers the operators to control the line.

2.7.1 Benefits of Kanban

Kanban forces people to look at production processes in a different way:

1. Reduces Inventory by nearly 50%
2. Improve Flow — Create One PC Flow
3. Prevents Overproduction, which is the mother of all wastes
4. Places control at the operations level
5. Improves responsiveness to changes in demand (reduces Throughput Time)
6. Minimizes risk of having obsolete inventory

2.7.2 Kanban Cards

Kanban cards are most commonly thought of when discussing kanban because it is the method that Toyota used when it introduced its kanban scheduling system. A card does have its disadvantages, however, and many people do not like this method. Basically, a card, which identifies the part number and amount in the container, travels with the production item. After the production item is used, the card, through whatever system is set up, travels back to the production area and is placed in cardholder rack where the operation can visually see when it is time to produce more of that item.

Passion for LEAN

KANBAN CARD

Item Desc.

Item Code	
Location	
ROL	
SDQ	

SUPPLIER DETAILS	
Address	
Person	
Phone	
E-mail	

Fig. 2.7: Sample of kanban card

2.7.3 Kanban Boards

Kanban boards are variation of kanban cards. The board simply uses magnet, plastic chips, colored washers, etc. attached to the board as a signal. Each object represents a container or production item. It works like the kanban cards, but instead of chasing cards around a building, you are moving objects around a board. The board will have three main areas. You move the magnets to the area on the board that coincides with the container it represents. When a container is produced, the magnet is moved to the "work in process" section. When the container is taken to a work center, the magnet should be moved to the "awaiting production" section. Finally, the 'completed work in process' section is divided into red, yellow and green sections. The red gets filled with magnets first and green is last. When you are in the red section that means you must produce more because you are in the danger zone. This is a very simple method of scheduling at a glance.



Fig. 2.8: Picture of Kanban board in operation

2.7.4 Electronic Kanban

Electronic kanban is the 'high-tech' version of the faxban (Faxbans are a variation of the kanban card system. It used to be done by Fax, but now more often its email.). The electronic kanban automatically transmits requirements or allows suppliers to access the customer's inventory status and ship replacement material. This method is not as visual as a kanban board or other look-see methods; however it does have its place. Do not confuse this with your current forecasting system. Even though this may see similar to the method your company uses now, it still needs to be based on demand, not a forecast.

2.7.5 Warehouse Racks

Racks are an effective storage method when paired with another system like a companion racking system. The racks provide a neat, space friendly storage area, and the tracking system provider's easy visual management of that storage.

2.8 VENDOR MANAGED INVENTORY (VMI) FOR VENDORS AND THE FIRM

Vendor Managed Inventory or VMI is a process where the vendor creates orders for their customers based on demand information that they receive from the customer. A means of optimizing Supply Chain performance in which the manufacturer is responsible for maintaining the distributor's inventory levels. This arrangement can improve supply chain performance but reducing inventories and eliminating stock-out situations. The vendor and customer are bound by an agreement which determines inventory levels, fill rates and costs. The manufacturer has access to the distributor's inventory data and is responsible for generating purchase orders.

The manufacturer receives electronic data (usually via EDI or the internet) that tells him the distributor's sales and stock levels. With VMI, the vendor specifies delivery quantities sent to customers through the distribution channel using data obtained from Electronic Data Interchange (EDI). The manufacturer can view every item that the distributor carriers as well as true point of sale data. The manufacturer is responsible for creating and maintaining the inventory plan. Under VMI, the manufacturer generates the order, not the distributor. This EDI transaction contains the sales and inventory information such as key product activity and forecast measures, such as:

- Quantity sold
- Quantity on order
- Quantity received
- Forecast Quantity
- Purchase Order Number
- Purchase Order Date
- Purchase Order Line item
- Quantity
- Price
- Item Number
- Description of Item
- Freight Charge
- Ship Date

2.8.1 Benefits of VMI

- One of the benefits of VMI is that the vendor is responsible for supplying the customer when the items are needed.
- When a distributor needs product, they place an order against a manufacturer. The distributor is in total control of the timing and size of the order being placed. The distributor maintains the inventory plan.

NOTES

- This removes the need for the customer to have significant safety stock.
- Lower inventories for the customer can lead to significant cost savings.
- The customer also can benefit from reduced purchasing costs. Because the vendor receives data and not purchase orders, the purchasing department has to spend less time on calculating and producing purchase orders.
- In addition, the need for purchase order corrections and reconciliation is removed which further reduces purchasing costs.
- Cost saving can also be found in reduced warehouse costs. Lower inventories can reduce the need for warehouse space and warehouse resources.
- The manufacturer can gain some benefits from vendor managed inventory as they can gain access to a customer's point of sale (POS) data makes their forecasting somewhat easier.
- Manufacturers can also work their customer's promotional plans into forecasting models, which means enough stock will be available when their promotions are running.

As a manufacturer has more visibility to their customer's inventory levels, it is easier to ensure that stock-outs will not occur as they can see when items need to be produced.

Check Your Progress

State Whether the Following Statements are True or False

5. Electronic Data Interchange or EDI is a ten digit number which assigns a unique five-digit number identification to each manufacturer and product.
6. A bar code is an optical machine-readable representation of data.
7. UPC is a standardized method for transferring data between different computer systems or computer networks.
8. Just-in-time is often known as Kaizen.
9. The electronic kanban automatically transmits requirements or allows suppliers to access the customer's inventory status and ship replacement material.

2.9 SUMMARY

- In this unit we have discussed about the procurement which refers to the raw materials, component parts, and supplies bought from outside organizations to support a company's operations. Procurement is a key activity in the supply chain. It can significantly influence the overall success of an emergency response depending on how it is managed.
- The aim and objective of procurement is to carry out activities related to procurement in such a way that the goods and services so procured are of the right quality, from the right source, are at the right cost and can be delivered in the right quantities, to the right place, at the right time.
- The three important principles of humanitarian logistics procurement are: transparency, accountability and efficiency and cost effectiveness. The principles and their importance stem from three key facts that the resources utilised are usually funded by donor, that transparency contributes to the establishment of sound and reliable business relations with suppliers and that efficiency and cost effectiveness has a direct impact on operations and ultimately on beneficiaries.
- A demand forecasting is the prediction of what will happen to your company's existing product sales. It would be best to determine the demand forecast using a multi-functional approach. The inputs from sales and marketing, finance, and production should be considered.

- There are three primary benefits to international procurement: lower costs, stimulation of a global economy, and increased consumer base. The lower costs that can be achieved through purchasing services or goods from other counties are derived from currency valuation and the effects of product specialization. Both of which are core concepts in economics.
- Real-time tracking of shipment information helps in keeping operations on schedule and customers happy. Various shipment tracking technologies helps in tracking shipments on all modes of transportation by some known reference value.
- JIT emphasizes the concepts of supply chain management which is to balance the flow of materials with customer requirements throughout the supply chain, such that costs, quality, and customer service are at optimal levels. JIT works with suppliers to remove waste, reduce cost, and improve quality and service.
- The premise of Kanban is to create Visual Indicator's to allow the operators to be the ones who determine how much of a product to run and when to stop or change over. Kanban rules also tell the operators what steps to take when they have problems and whom to go to when the problem occurs.
- Vendor Managed Inventory or VMI is a process where the vendor creates orders for their customers based on demand information that they receive from the customer. A means of optimizing Supply Chain performance in which the manufacturer is responsible for maintaining the distributor's inventory levels.

2.10 KEY TERMS

- **Procurement:** Procurement refers to the raw materials, component parts, and supplies bought from outside organizations to support a company's operations.
- **Purchasing:** Purchasing is the specific function associated with the actual buying of goods and services from suppliers; and
- **Sourcing:** Identifying and working with appropriate suppliers.
- **Demand Forecasting:** A demand forecasting is the prediction of what will happen to your company's existing product sales.
- **Time Series Analysis:** Time series analysis is a statistical approach applicable for demand forecasting.
- **Universal Product Code (UPC):** UPC is a ten digit number which assigns a unique five-digit number identification to each manufacturer and product.
- **Electronic Data Interchange (EDI):** Electronic Data Interchange or EDI is a standardized method for transferring data between different computer systems or computer networks.

NOTES

- **Radio-Frequency Identification (RFID):** Radio-frequency Identification (RFID) is the use of an object applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves.
- **Global Positioning System (GPS):** This system allows knowing about the status of goods that are sent each time.
- **Just-In-Time (JIT):** It is a Japanese system of inventory reduction continuous improvement, and the synchronization of material flows from within the organization and eventually including the organization's immediate suppliers and customers.
- **Kanban:** It create Visual Indicator's to allow the operators to be the ones who determine how much of a product to run and when to stop or change over.
- **Vendor Managed Inventory (VMI) :** Vendor Managed Inventory or VMI is a process where the vendor creates orders for their customers based on demand information that they receive from the customer.

2.11 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Procurement is the process of identifying and obtaining goods and services. It includes sourcing, purchasing and covers all activities from identifying potential suppliers through to delivery from supplier to the users or beneficiary.
2. Procurement policies will vary from organisation to organisation but are the organizational rules and regulations governing the procurement function. The policies determine how different aspects of procurement will be carried out in the organisation and how people working in procurement should behave.
3. Specification is a detailed description of the design, the service, or materials. It describes in detail the requirements to which the supplies or services must conform.
4. Sourcing is the process of identifying sources of supply that can meet the organisations immediate and future requirements for goods and services.
5. False
6. True
7. False
8. True
9. True

2.12 QUESTIONS AND EXERCISES

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Short Answer Questions

1. What is procurement? Write down the aim and objective of procurement.
2. Write down the procurement process?
3. Write short note on global procurement.
4. Explain the following:
   (a) Universal Product Code
   (b) Electronic Data Interchange
   (c) Radio-frequency Identification
   (d) Global Positioning System
   (e) Vendor Managed Inventory

Long Answer Questions

1. Briefly explain the logistics as interface function of demand forecasting.
2. What is demand forecasting? Explain the forecasting consumer demand.
3. Discuss the tracking inward shipments and storage planning.
4. Describe logistics as an enabler of Just-In-Time (JIT).
5. What is Kanban? What are the benefits of Kanban? Explain Kanban cards, kanban boards and electronic kanban.
6. Enumerate the benefits of Vendor Managed Inventory.

UNIT 3 LOGISTICS AND MARKETING

NOTES

Structure

3.0 INTRODUCTION

Case Let: Benetton's 'Dual Supply Chain' System

The dual supply chain system practiced by Italy based clothing company Benetton SpA (Benetton). In this system, production was carried out in Asian and European countries, depending on the time required to market the product. The dual supply chain focused both on pull as well as push based demand. After implementing the new supply chain system, Benetton was able to launch five collections in each season, with some of the collections incorporating the latest trends. The case explains the postponement strategy of Benetton, the supply chain problems it faced in the late 1990s and the Dual Supply Chain system.

During the 1980s and early 1990s, Benetton was the world leader in the casual apparel market with stores spread across the world. The company was well known for its postponement strategy, wherein the dyeing of the garment was postponed till the colours in vogue for the season were identified. By the late 1990s, Benetton could not compete with the fast fashion retailers which were launching several collections a year, as against only two collections brought out by Benetton. In order to meet the changing demands of the customers, Benetton revamped its supply chain, and opted for a Dual Supply Chain system.



Retailing

Benetton functioned through a licensor-licensee relationship, where the needs of the retail market were catered to by agents, who obtained a license from Benetton to sell its products. The agents were responsible for recruiting retailers, showing Benetton's collections in a particular region in a country, processing retailer orders, selecting retailer locations, training, and letting the company know the latest trends in a particular region.

Production and Distribution

Benetton operated through production facilities which produced garments in high volume and with few varieties. In 1984, Benetton planned to invest in advanced production facilities in Castrette, Italy. The plant became fully operational in 1986. However, investments in this plant continued through the 1990s, leading to an increase in production capacity. By the year 1999, the plant covered an area of 190,000 sq. meters, and capacity to produce up to 100 million units every year. By 2006, the automatic sorting system in the plant, could sort garments for more than 5,000 Benetton outlets.

Source: *http://www.icmrindia.org*

In the previous unit, we dealt with the concept of procurement and how logistics as a support function of procurement and vendor facilitation. The unit also discussed about the logistics as interface function of demand forecasting, global procurement, tracking inward shipments and storage planning and logistics as an enabler of just-in-time, kanban, vendor managed inventory.

In this unit, we will deal with areas of logistics and marketing interaction, logistics-marketing interface, logistics as a support function of order fulfillment,

assembling and labeling from multi-storage points and delivery, logistics as an interface of market (sales) forecasting, stock level management, logistics as a support function of procurement and vendor facilitation, invoice or sales documentation, picking products, transport packaging, packing, marking, preparing outbound documentation, shipping out by loading into containers and customer facilitation tracking out-bound shipments. To make the learning easier, we will take the help of globally recognized best practices.

From the viewpoint of management, marketing logistics or physical distribution has been described as 'planning, implementing and controlling the process of physical flows of materials and final products from the point of origin to the point of use in order to meet customer's needs at a profit. As a concept it means the art of managing the flow of raw materials and finished goods from the source of supply to their users. In other words, primarily it involves efficient management of goods from the end of product line to the consumers and in some cases, includes the movement of raw materials from the source of supply to the beginning of the production line. These activities include transportation warehousing, inventory control, order processing and information monitoring.

These activities are considered primary to the effective management of logistics because they either contribute most to the total cost of logistics or they are essential to effective completion of the logistics task. However, the firms must carry out these activities as essential part of providing customer with the goods and services they desire. Logistics management starts with as curtaining customer need till its fulfillment through product supplies and, during this process of supplies; it considers all aspects of performance which include arranging the inputs, manufacturing the goods and the physical distribution of the products. However, there are some definite objectives to be achieved through a proper logistics system.

3.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Know the areas of logistics and marketing interaction
- Discuss logistics-marketing interface and logistics as a support function of order fulfillment
- Explain assembling and labelling from multi-storage points and delivery and logistics as an interface of market (sales) forecasting
- Know stock level management and invoice or sales documentation
- Describe picking products
- Understand transport packaging, packing and marking
- Explain preparing outbound documentation and shipping out by loading into containers
- Discuss customer facilitation tracking out-bound shipments.

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3.2 AREAS OF LOGISTICS AND MARKETING INTERACTION

In today's competitive environment organizations are utilizing the benefits of their established logistics/marketing interface to be competitive not in terms of product and price but also logistics services tailored to meet individual customer needs. These organizations are able to differentiate themselves from their competitors by offering a total service with logistics forming an essential part of the total value chain.

The major area of interaction between logistics and marketing includes:

- **Product Design:** This can have a major effect on warehouse and transportation utilization (and therefore costs).
- **Pricing:** This is the means by which logistics services customer demand affects the overall cost of the product and in turn the organization's pricing policies.
- **Market and Sales Forecasts:** Marketing forecasts will largely dictate the level of logistics resources needed to move products to customers.
- **Customer Service Policies:** If marketing opts to offer a very responsive level of service to customer, logistics resources, in the form of facilities and inventory, will need to be very considerable.
- **Number and Location of Warehouses:** This is one of the greatest areas of contention and can only be satisfactorily resolved if marketing and logistics develop the policy jointly.
- **Inventory Policies:** This is another area of contention, as these decisions have a significant bearing on operational costs and the extent to which desired levels of customer service are achieved. It is another key area where policy should be developed jointly.
- **Order Processing:** Responsibility for who receives customer's orders and the speed and efficiency with which they are processed has a major impact on operational costs and customer's perceptions of service levels. This is another area where joint policy-making is preferable.
- **Channels of Distribution:** Decisions to deliver direct to the customer or through intermediaries will greatly influence the level of logistics resources required. As channels change, so will the resources required. Marketing should definitely consult with logistics when making channel decisions.

TABLE 3.1: Marketing and Logistics Interface

Marketing activities	Logistics activities	Marketing logistics interface
Marketing research Product mix Pricing Promotion Sales force management	Forecasting Transportation Storage Packing Order fulfillment	Customer service Transport Inventory processing Material handling Information

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3.3 LOGISTICS-MARKETING INTERFACE

Traditionally logistics group assumed primary responsibility for warehousing, inventory and transportation within many organizations while marketing group is responsible for negotiation, promotion and selling. As neither group had responsibility for over all channel management, conflicts arose at the expense of overall organization goal. The organizations had realized that functional interdependence, not internecine conflicts, is the key to satisfy customer needs. Despite the realization by logistics and marketing manager that cooperation is essential marketers often criticize logistics department for being cost minimizes having no concern for customer needs while logistics department accuses marketers of chasing sale at any cost. Therefore it is essential that organizations identify area of agreement and potential conflict. Senior management must be keen to actively support cooperation between the two groups. This can be assisted by performance measurement that rewards cooperation and a spirit of interdependence that actively discourages parochial behaviour.

3.3.1 Logistics and Product Life Cycle

Product life cycle (PLC) is a key marketing concept that affects the relationship between logistics and marketing. For different stages of PLC i.e., introduction, growth, maturity and decline, different level of logistics support is required by marketing. In the introduction and growth stage timely cost effective fulfillment of order is a major requirement in ensuring initial acceptance of the product. Later as sales slow down and the product moves into the maturity and decline stages, the company changes to trimming cost as the product faces stiff price competition and consequent pressure on margins. Hence there is need for a logistics manager to understand what marketing is trying to achieve with each product and what appropriate level of logistics support is required accordingly.

3.3.2 Areas of Logistics and Marketing Interaction

In today's competitive environment organizations are utilizing the benefits of their established logistics/marketing interface to be competitive not in terms of product and price but also logistics services tailored to meet individual customer needs. These organizations are able to differentiate themselves from their competitors by offering a total service with logistics forming an essential part of the total value chain. The major area of interaction between logistics and marketing includes:

- **Product Design:** This can have a major effect on warehouse and transportation utilization (and therefore costs).
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- **Market and Sales Forecasts:** Marketing forecasts will largely dictate the level of logistics resources needed to move products to customers.

- **Customer Service Policies:** If marketing opts to offer a very responsive level of service to customer, logistics resources, in the form of facilities and inventory, will need to be very considerable.
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- **Channels of Distribution:** Decisions to deliver direct to the customer or through intermediaries will greatly influence the level of logistics resources required. As channels change, so will the resources required. Marketing should definitely consult with logistics when making channel decisions.

3.4 LOGISTICS AS A SUPPORT FUNCTION OF ORDER FULFILLMENT

Fulfillment is all of the activities needed to provide customers with ordered goods and services, including related customer services. Logistics is defined as the operations involved in the efficient and effective flow and storage of goods, services, and related information from point of origin to point of consumption. The order for fulfillment process has nine steps. The steps include: making sure the customer will pay, checking for in-stock availability, arranging shipments, insurance, production, plant services, purchasing and warehousing, contacts with customers, and returns.

Order fulfillment is a very important component of SCM since logistics system is driven by demand and this is how demand is captured. A very important part of customer service is the time taken to complete the time taken to complete the activities of order processing. Although the absolute time taken to transmit the order has reduced considerably due to computer and high speed data lines, the time taken in order processing as a proportion of total order cycle time is considerably high, due to the use of faster delivery means.

The order fulfillment system represents the principal means by which buyers and sellers communicate information relating to individual orders of product. Effective order management reflects the quality of the firm's overall management information system. By starting the process with an understanding of customer needs,

firms can design order-management systems that will be viewed as superior to those of competitor firms.

A company's order fulfillment capabilities will contribute toward producing a competitive advantage. The object of order management system should be to provide for the perfect order. The notion of the perfect order is that desired customer service capability, in terms of availability and operational performance, should be such that the firm achieves target service goals each and every time. The total order cycle performance should have zero defects.

Put simply, this means that the order should be complete in terms of all aspects of service from order receipt to delivery coupled with error free invoicing and information transmission. In order to improve its service and reduce defects UPS, whose primary business is time-definite delivery of packages and documents, has invested heavily to provide technology solutions with tailored software and hardware that offer a way to integrate tracking features into the customer's intranet or Web site.

The raises the fundamental question – how much basic service should a logistical system provide? Considering the costs and investments involved, this is not easy to answer. The answer may depend on the firm's overall marketing strategy and the relative emphasis it places on specific elements of the marketing mix. If a firm seeks to differentiate on the basis of logistical competency, then it will try to provide high levels of basic service. If the firm competes on price, then it is highly unlikely that it will be able or will desire to implement high-level logistical performance as this would reduce its ability to be cost competitive.

It may also depend upon the stage in the product life cycle. During the 'introduction' stage of the product a 'perfect order' would be unrealistically expensive, as it would also be in the 'decline stage' of the product. However, the cost for such a service orientation during the 'maturity stage' of the product life cycle may be well justified.

In many ways the concept of a perfect order is the logical extension of quality. However, as the typical perfect order program involves activities that exceed the basic service program, it is expensive to maintain. Some of the common causes of failure of perfect orders are:

- Order entry error,
- Missing information,
- Non-availability of ordered item,
- Inability to meet shipment date,
- Picking error,
- Inaccurate documentation,
- Late shipment,
- Late or early arrival,

- Damaged shipment,
- Invoicing error, and
- Error in payment processing.

Order processing includes

- Order preparation involves the customer or salesperson filling out an order form, communicating the order through telephone, or selection from a computer menu.
- Order transmittal involves transmitting the order from where it has been received to the place where it can be handled. It can be done in two ways: manual and electronic. Manual order means mailing of order by the customer or sales representative to the point of order entry. This is a slow but inexpensive method. It is also possible to transmit the order electronically by using toll free telephone numbers, data phones, computer modems, fax machines and satellite communication. This method is highly reliable, instant and accurate.
- Order filling includes the following activities:
  - ❖ Acquiring the product through stock retrieval, production or purchase.
  - ❖ Packing the item
  - ❖ Scheduling for shipment
  - ❖ Preparing the shipment documentation
- Order status reporting ensures good customer service by keeping the customer informed of any delays in order processing and delivery.

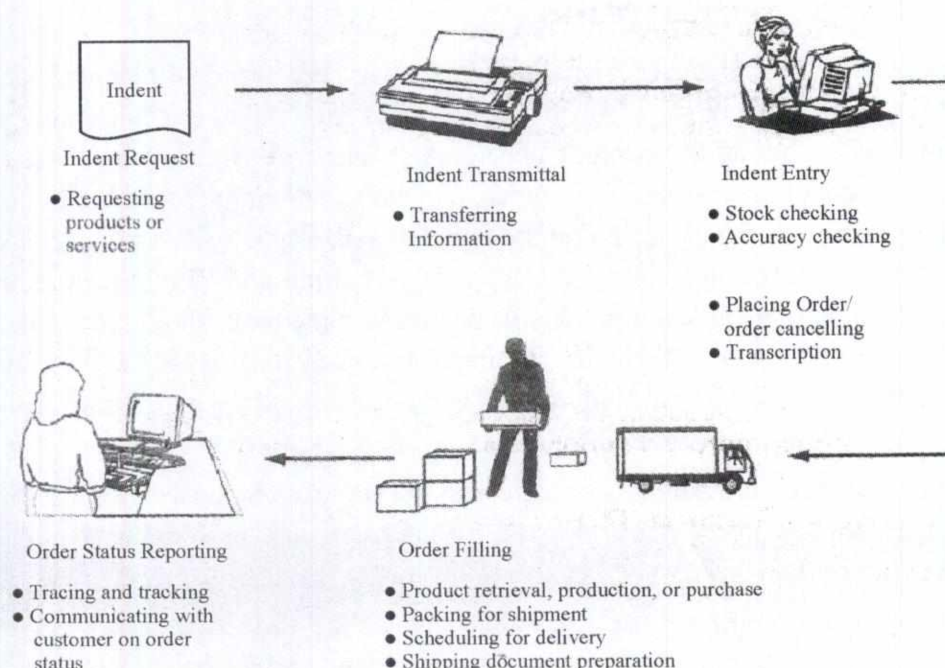


Fig. 3.1: Order processing and delivery system

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3.5 ASSEMBLING AND LABELING FROM MULTI-STORAGE POINTS AND DELIVERY

Assembling is done in two steps: (a) completion of a complicated process in assembling process general products in workshop, (b) completion of uncomplicated process in assembling the ordered products in distribution point. This strategy in differentiation of the delayed products is suitable for ordering a large amount of products. Manufacturer, upon completion of complicated assembling process, shall assemble different kinds of general parts to make different kinds of end products by the use of divergent assembly method. In this case, what to be stored are mainly the assembly parts that shall be assembled during the initial stage. As semi product and assembly parts are to be delivered to different places for assembling to make end products as needed by customers, the stored semi products therefore shall be found in divergent supply chain network.

To supply the demand of purchaser, a company makes products based on an order placement. However, this type of production extends the time from ordering to product delivery, hence leading to a possible reduction of customers satisfaction. Therefore the main problem in managing divergent supplier chain network is to develop a method to shorten the time. This is particularly the case for supply chain network in the field of apparatus, electronics and computer industries, where product life circle may last for months or years. The package should be marked and labeled for purposes of checking of cargo against documents.

3.5.1 Standard Shipping Marks

The markings on the packages called shipping marks serve as identification marks for carriers and those engaged in the handling of the package at all stages of transportation as well as for the consignee at destination. It also enables checking of the consignment against the documents. The marks should be stenciled in bold letters and figures on the sides and on the top of the packages so that the packages can be spotted and recognized at a distance. The marking and labeling should be simple and incorporate all essential details but at the same time, should avoid non-essential details which would only lead to mistakes, confusion and shipment delays. In the carriage of goods by rail, full address is required on all packages; this is also the conventional practice for road transport.

Efforts made by international agencies have brought about the use of simplified and standardized Shipping marks for use on packages and in documents for all modes of transport.

The standard shipping marks are made up of the following four elements explained with example in the sequence indicated, and should be shown both on packages and in documents.

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Examples

1. Initials or consignee's name NTC
2. Reference number 01608
3. Destination Kuala Lumpur
4. Package number 1/8

If transit points are involved, these may also be indicated. A typical ocean shipping mark for this example is:

NTC
01608
Kuala Lumpur via Port Klang
1/8

Information Marks

Additional information such as weight, country of production of the goods, etc. may be marked on the packages if considered necessary.

3.5.1 Cargo Handling Instructions

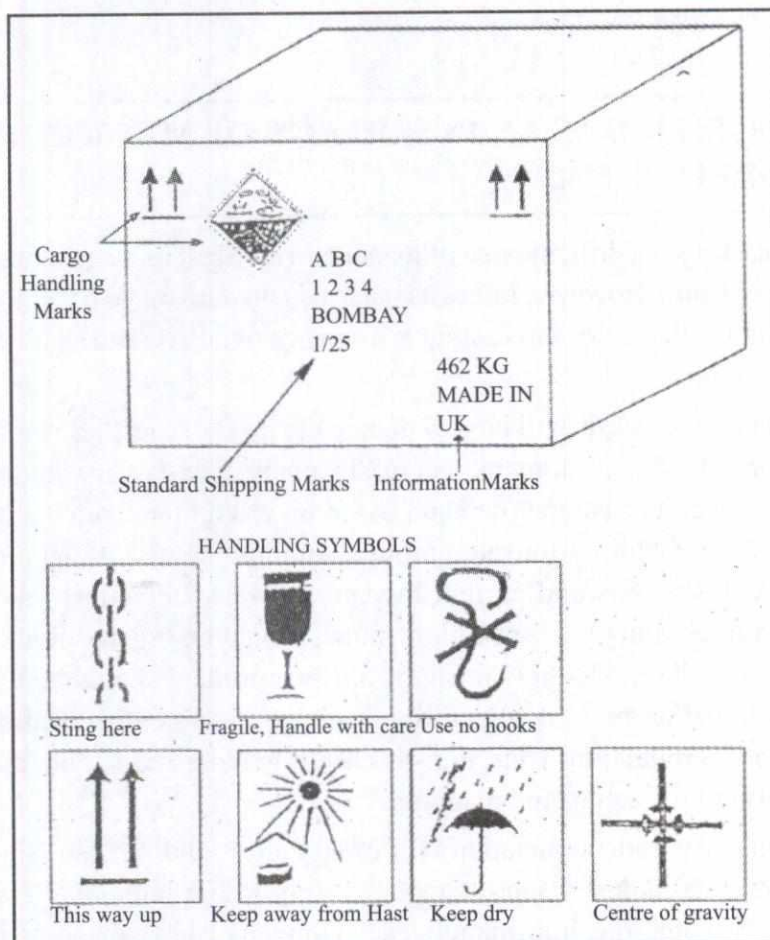


Fig. 3.2: Package Containing both Shipping Marks and Handling Symbols

Cargo handling instructions for cargo handling marks, providing guidance for handling packages (heavy packages, packages containing fragile cargo, etc.) are also required to be displayed on the packages but sufficiently separate from the shipping marks to avoid confusion.

Handling instructions should always be printed on the outer package in the language of the country of destination in order to ensure that they are understood by freight handlers there. The seven symbols depicted below have been adopted internationally and may be used.

A package containing both shipping marks and handling symbols.

3.5.2 Simpler Shipping Marks

The purpose of shipping marks is to identify cargo and helps move it rapidly, smoothly and safely without delays or confusion to its final destination, as well as to enable the checking of the cargo against documents. However, in some instances, shipping marks have become so lengthy and detailed that the sides of packages can no longer hold them. It has been said that packages become documents. The result is unnecessary costs, mistakes, confusion and shipment delays and the purpose of shipping marks is lost.

3.6 LOGISTICS AS AN INTERFACE OF MARKET (SALES) FORECASTING

Sales forecasting is a difficult area of management. Most managers believe they are good at forecasting. However, forecasts made usually turn out to be wrong. Marketers argue about whether sales forecasting is a science or an art. The short answer is that it is a bit of both.

Marketing forecasts will largely dictate the level of logistics resources needed to move products to customers. There are many types of marketing forecasts. Marketing forecasts customer demand based on promotions, pricing, competition, and so on. Manufacturing forecasts production requirements based on marketing's sales demand forecasts and current inventory levels. Logistics usually becomes involved in forecasting in terms of how much should be ordered from its suppliers (through purchasing), and how much of finished product should be transported or held in each market that the organization serves. In some organizations, logistics may even plan production. Thus, logistics needs to be linked to both marketing and manufacturing forecasting and planning.

An industry trade association will often collect and publish (sometime only to members) total industry sales, although rarely listing individual company sales separately. By using this information, each company can evaluate its performance against the whole market.

Another way to estimate sales is to buy reports from a marketing research firm such as AC Neilsen, Mintel etc. These are usually good sources of information for consumer markets – where retail sales can be tracked in great detail at the point of sale. Such sources are less useful in industrial markets, which usually rely on distributors.

3.6.1 Reasons for Undertaking Sales Forecasts

Businesses are forced to look well ahead in order to plan their investments, launch new products, and decide when to close or withdraw products and so on. The sales forecasting process is a critical one for most businesses. Key decisions that are derived from a sales forecast include:

- Employment levels required
- Promotional mix
- Investment in production capacity

3.6.2 Types of Forecasting

There are two major types of forecasting, which can be broadly described as macro and micro:

1. Macro forecasting is concerned with forecasting markets in total. This is about determining the existing level of Market Demand and considering what will happen to market demand in the future.
   (i) what will happen to overall economic activity in the relevant economies in which a product is to be sold;
2. Micro forecasting is concerned with detailed unit sales forecasts. This is about determining a product's market share in a particular industry and considering what will happen to that market share in the future.
   (i) what will happen to overall sales in an industry based on the issues that influence the macroeconomic forecast;
   (ii) based on what management expect to happen to the company's market share.

The selection of which type of forecasting to use depends on several factors:

1. The degree of accuracy required: If the decisions that are to be made on the basis of the sales forecast have high risks attached to them, then it stands to reason that the forecast should be prepared as accurately as possible. However, this involves more cost.
2. The availability of data and information : In some markets there is a wealth of available sales information (e.g. clothing retail, food retailing, holidays); in others it is hard to find reliable, up-to-date information.
3. The time horizon that the sales forecast is intended to cover: For example, are we forecasting next weeks' sales, or are we trying to forecast what will happen to the overall size of the market in the next five years?

4. The position of the products in its life cycle: For example, for products at the "introductory" stage of the product life cycle, less sales data and information may be available than for products at the "maturity" stage when time series can be a useful forecasting method.

Sales forecasts can be based on three types of information:

1. What do customers say about their intentions to continue buying products in the industry?
2. What are customers actually doing in the market?
3. What have customers done in the past in the market?

There are many market research businesses that undertake surveys of customer intentions – and sell this information to businesses that need the data for sales forecasting purposes. The value of a customer intention survey increases when there are a relatively small number of customers, the cost of reaching them is small, and they have clear intentions. An alternative way of measuring customer intentions is to sample the opinions of the sales force or to consult industry experts.

In an ever-changing business and economic environment, it is necessary to have an idea about the probable future course of events a micro level. Analysis of the relevant time series data helps achieve this, especially by facilitating the forecast of the future trends and expected volumes of business. Such forecasts many a times serve as crucial inputs in deciding competitive strategies and planning growth initiatives.

3.7 STOCK LEVEL MANAGEMENT

Let us discuss the stock level management in the following sections:

Re-order Level: The storekeeper starts to make the purchases when the inventory in stores reaches this level. The re-order level is fixed taking into consideration lead-time and unusual delays or interruptions. This is calculated as follows:

Re-order Level = Maximum consumption × Maximum Re-order Period

Minimum Level: Inventories are not allowed to fall below this level. These are otherwise called as safety stocks in the event of emergency. If the inventory level falls below this level there is a greater chance of stock-out. This generally happens when the consumption increases the standard requirements. This is calculated as follows:

Minimum Level = Re-order Level – (Normal consumption × Normal Re-order Period)

Maximum Level: This is considered to be the highest level beyond which

holding of inventories implies blocking of funds unnecessarily. The good inventory control technique should keep a constant check to see that the inventory level does not rise beyond this level. The maximum level is fixed taking into consideration the Re-order quantity, carrying costs, and the availability of capital, government policy and the nature of the materials.

Maximum Level = Re-order Level + .5 (Re-order quantity) – (Minimum consumption × Minimum Re-order Period)

Danger Level: This level is fixed even below the minimum level as a disastrous signal when the inventory level touches this level. This has to be solved by exercising greater efforts in purchasing to bring the inventory to the required level.

Re-order Point: When the question of maintaining inventory at optimum cost is raised one should not only focus on how much to order but the firm should also concentrate on when the order has to be placed. Arriving at the re-order point solves this. This is the level at which the orders should be placed to replenish the inventory. It takes into consideration the lead-time required to receive the inventory and the average usage. This should be a level over and above the minimum level or safety stock. Re-order point is calculated as follows:

Re-order point = Safety stock × (Average consumption × lead time)

The determination of economic order quantity and different order levels are basically a planning exercise. The inventory management does not end with planning and what is more important is its implementation and continuous control on inventory. The following techniques, which follow selective control, are useful to exercise control on inventory.

3.7.1 ABC Analysis

ABC works on the mechanism namely Always Better Control. Vilfredo Pareto, called nineteenth century Renaissance man, was the first to document the Management Principle for Materiality, which formed the basis of ABC analysis discussed here. As per Pareto, the ABC principle involves:

1. Classifying the inventory on the basis of importance on a relative basis to the total inventory value.
2. Establishing different management controls for different classification with the degree of control being commensurate with the importance of the classification.
3. Hence this follows the criteria of concentrating the attention on most critical items and pays less concern for less critical items, something equivalent to the management by exception rule one could have come across in the basic management textbooks. For this purpose the management has to be careful in

classifying the inventories into high, moderate and less critical goods. How is this done? The usual methodology is to use the Rupee volume as the criteria to classify them into categories, but there are several other factors that determine the importance of the item. These include:

- Annual Rupee volume of the items.
- Unit cost
- Scarcity of material used in producing an item.
- Availability of resources, manpower, and facilities to produce an item.
- Lead-time.
- Storage requirements for an item.
- Pilferage risks, shelf life, and other critical attributes.
- Cost of stock-out.
- Engineering design volatility

Using value of items as the basis for such classification, if on an average the 15% of the items account for nearly 65% of the total inventory value, this falls under the most critical category which is usually named as the 'A' category. Similarly if 30% of the items account for 25% of the total inventory value, this falls under the next category named as 'B' category. The balance 55% of the items that account for nearly 10% of the total inventory value fall under the least category named as 'C' category.

Control Levels: In the case of A category item, close controls are required to avoid stock-out costs. Arranging the supply with large number of vendors rather than depending only on a few suppliers might do this. Stock levels as discussed above are strictly maintained. Moreover holding buffer stocks would be more useful in managing the stock-out. In the case of B category item the stock-out costs could be somewhere between moderate to low. Hence appropriate computer-based system, with periodic reviews by the management is utmost necessary. In addition buffer stocks could be adequate control mechanism. On the other hand, routine control is sufficient for stocks falling under the C category. Action is taken only if the stock level falls below the re-order point. A periodic review at longer interval may also be sufficient.

3.7.2 VED Analysis

VED stands for Vital, Essential and Desirable. This technique is primarily used for the control of the spare parts inventory. As the name goes the spare parts are subdivided into vital, essential and desirable categories, based on their critical nature. The criticality is determined by the importance of its usage. If the event of stock-out in an item stops the production, then it is classified under the 'vital' category. Those spares the absence of which is not tolerated for even few hours or a day, the loss of, which is considerably high, falls under the 'essential' category. Desirable spares are those, the absence of which are not expected to create havoc for a week or so and

necessarily would not result in the stoppage of the production. Hence one could find that the VED analysis adopts almost the similar mechanism of the ABC analysis in that the former is used for the Current control of spare parts.

3.7.3 F-S-N Analysis

Inventory items are also classified and controlled on the basis of fast-moving, slow-moving and non-moving items (F-S-N analysis). The non-moving items are critically examined for their needs and items, which are not critical, are disposed off in a suitable manner. They may be used in the production process with modifications or sold in the market. The order levels and economic order quantity for slow-moving items are reviewed to check, whether they can be further reduced without affecting the production process. The above three analysis are not mutually exclusive and in fact, by combining the analyses, the management can get a better picture on the inventory. For example, items, which are fast-moving, vital and "A" class, may require very close monitoring because excess holding will cause additional cost and at the same time stock-out will also cause equal loss. Inventory policy can be designed by combining the three analyses.

3.8 INVOICE OR SALES DOCUMENTATION

The standard documents are:

- Invoice (Commercial Invoice, Performa Invoice)
- Packing list
- Certificate of Origin
- Bill of Lading
- Shipping Order
- Mate's Receipt
- Shipping Bill
- Port Trust Document
- Marine Insurance
- Declaration Form
- Marine Insurance Certificate
- Airway bill
- Post Parcel Receipt
- Bill of Exchange
- Bill of Entry

Each of these documents can be reproduced from the same master by using the relevant mask. Reproduced signatures on individual documents may in deep present some problem. Until an agreement is reached among all concerned as to their acceptability it would be necessary to mask the signature column also on the

NOTES

master and to sign the individual documents manually. Besides, as all the copies of the reproduced documents, particularly where the spirit duplicator is used. Will have the same impression it will be difficult to distinguish the original from the copies of the document. This is however, not a serious problem and can be solved by a universal understanding that unless 'Copy' is marked, the document will be treated as original. It is no doubt convenient to give the dates on the documents in the numeric way. In doing so, however, the exporter should ensure that such dates would be interpreted abroad in the same way as they interpret them. To avoid ambiguity, it would be better to express the date of the month in two figures, followed by the name of the month in three letters and the year in four figures.

3.8.1 Principal Documents

Proforma Invoice

The starting point of the export contract is in the form of offer made 'by the exporter to the foreign customer. The offer made by the exporter is in the form of a proforma invoice. It is a quotation given as a reply to an inquiry. It normally forms the basis of all trade transactions.

Contents of Proforma Invoice

1. Name and address of the exporter.
2. Name and address of the importer.
3. Mode of transportation, such as Sea or Air or Multimodal transport.
4. Name of the port of loading.
5. Name of the port of discharge and final destination.
6. Provisional invoice number and date.
7. Exporter's reference number.
8. Buyer's reference number and date.
9. Name of the country of origin of goods.
10. Name of the country of final destination.
11. Marks and container number.
12. Number of packing descriptions.
13. Description if goods given details terms of internationally accepted price quotation.

Export Invoice

Invoice is a document of content. It's the exporter's bill for goods and sets forth the terms of sale. The invoice is a basic document. As a document of contents, it must fully identify the overseas shipment and serve as a basis for the preparation of all other documents which in greater or lesser detail reproduce information from it. The

exporter should strictly follow the requirements of the importer in regard to invoicing. The standard document in respect of the invoice I based on the United Nations Key Layout which has been accepted as the basis of this document in many entries. The information requirements of the document have been determined after examining a number of forms of invoices used by leading export organizations and after series of discussions with the representatives of the Department of Customs and Central Excise and the Federation of Custom House Agents' Associations in India.

Invoices based on the suggested design will be acceptable not only in many countries but will also help facilitate processing of documents at various stages. The Declaration given at the bottom (left hand) of the Invoice follows the UN recommendation. The standard Invoice can be reproduced from the master by masking only three columns, i.e. Notify Party, Insured Value and No. of Original B/L No. and Date on the invoices. But under the present procedure for customs clearance and shipment of export cargo, this information, particularly in respect of the B/L No. and Date, will be available to exporters only after shipment has been effected. Where required under letter of credit, such information will need to the banks for negotiation. But for this, the rest of the information can be reproduced from the master.

The information referred to in the preceding lines can be given above the columns for Country of Origin and Final Destination in the order of name of shipping line, ETD (port of shipment), ETA (destination port) and B/L No. and Date. Unused space, in the Buyer's column and below the Consignee's Column can be utilised for incorporation of any other information which may be special to a transaction. Value and Origin Clauses can be printed on the back side of the Standard Invoice. There may be cases when exports are required to give detailed descriptions or specifications of the various items forming part of the consignment exported in one lot. In such cases, exporters are advised to use Continuation sheets' to the Invoice.

Packing List

This may be shown on invoice or separately, and should contain item by item, the contents of cases or containers or of a shipment with its weight and description set forth in such a manner as to permit checks of the contents by the customs on arrival at the port of destination as well as by the recipient. The packing list is a relatively simpler document and the whole of the information can be reproduced from the master by masking information not desired on the packing list. Special information, if any, can be given in the blank space in the lower third portion of the document.

Certificate of Origin

This certificate certifies that place of the origin of the merchandise besides the Federation of Indian Chambers of Commerce and Industry, EPCs and various other trade associations have been authorized by government of India to issue certificates of origin. These certificates are important in the case of shipments to countries which have preferential rates of tariff for Indian goods. Chambers of commerce issue certificates of Origin on their own printed forms differing in sizes and layout. The

standard document in respect of the Certificate of Origin included in the series of aligned document in this chapter has been prepared after leaking into consideration the requirements of the different certificates of origin issued by the different chambers of commerce in the country. It is suggested that all chambers of commerce should follow this pattern and make available as printed forms of their respective certificates of origin to exporters so that the necessary information could be reproduced from the master at the reproduction stage. The exporter will complete the Declaration after shipment as given at the bottom (right hand) of the document and present if for certification at the office of the chamber of commerce.

Bills of Lading

A bill of lading is a document issued and signed by a shipping company or its agents acknowledging that the goods mentioned in the bill of lading have been duly received for shipment, or shipped on board a vessel, and undertaking to deliver the goods in the like order and condition as received, to the consignee, or the bill of lading have been duly paid. Bill of lading serves the following purposes:

1. It is receipt for goods received by the shipment company;
2. A contract with the Carrier. It contains the terms of the contract between the shipper and the shipping company, between stated points at a specific charge; and
3. Evidence of Title, It is a certificate of ownership or little to the goods. For the bill of lading to be negotiable, in fact, three requirements must be fulfilled:
   (a) It must be made out to the order to the shipper.
   (b) It must be signed by the steamship company.
   (c) It must be endorsed in blank by the shipper.

Endorsement on Bill of Lading

By practice and custom the bill of lading has been transferable. If however, the bill requires the goods to be delivered to a particular named person and does not include a reference to his assignees; the bill of lading is not transferable. It is only rarely that a bill of lading would be drawn this way. The consignee or consignor as the case may be, can transfer the B/L either by a special endorsement, i.e. an endorsement which names the transferee to whom delivery is to be made or by an endorsement in blank to be bearer. The holder may, however, convert the blank endorsement into a special endorsement by inserting, the name of a person to whom delivery is to be made. It is then called the "endorsement in full".

Sending of Bill of Lading to Importer

B/L is made out in sets and any number of copies may constitute the set according to the requirements of the particular transaction and the importer. The number of copies to be made out will be indicated by the importer before the shipment takes place.

In case there is no such indication, normally, two copies. One set of documents is sent by the first class airmail and the second by the following mail, so that if one is lost. Delivery of the goods can be taken by the importer because of the second set.

Contents of a Bill of Lading

- The usual form of a Bill of Lading includes the following information:
- Name of the shipping company.
- Name of the shipper.
- Name and address of the importer (consignee).
- Name and address of the party to be notified on arrival of the shipment, usually the importer. This applies only when the bill of lading has been made out "to order."
- Name of the carrying vessel.
- Names of the ports of loading and discharge.
- Whether freight is payable and whether it has been paid.
- Number of originals in the set of the bill of lading documents.
- Marks and number identifying the goods.
- Brief description of the goods (possibly including weights and dimensions).
- Number of packages.
- Signature of the ship master or his agent.
- Date on which the goods were received for shipment and / or loaded on the vessel (This must not be later than the shipment date indicated in the export order or the Letter of Credit document).
- Signature of the exporter (or his agent) and his designation if applicable.

In case the consignor wants to take the entire ship on hire for transportation of the cargo then the transport document issued by the shipping company is known as Charter Party. This is different from Bill of Lading, which is issued when a particular cargo occupies part of the space on the ship.

Types of Bill of Lading

As a receipt, the bill of lading can be of various types as discussed below:

(a) Received for Shipment B/L: It is issued by the shipping company when goods have been given into the custody of the shipping company but have not yet been placed on board the ship.

(b) On Board Shipped B/L: It certifies that the goods have been received on board the ship.

(c) Clean B/L: It indicates a clean receipt. In other words, it implies that there was no defect in the apparent order and condition of the goods at the time of receipt or shipment of goods by the shipping company, as the case may be.

(d) Clause or Dirty B/L: This bill bears a superimposed clause an annotation, which expressly declares a defective condition of the goods. The clause may state "package number 20 broken" or "bale number 20 hook-damaged". By superimposing such clauses on the BIL, the shipping company limits its responsibility at the time of delivery of goods at the destination. It is very important to note that only a clean B/L is acceptable for negotiation of documents with the bank.

(e) Combined B/L: It covers several modes of transport for performing the complete journey from the exporting country to the importer's warehouse. For example, part of the journey may be completed by ship while subsequent parts may be undertaken by road; rail and air.

(f) Through B/L: It covers goods being transshipped enroute but where the first carrier has the responsibility as the principal carrier for all stages of the journey.

For example, goods may be shipped from Bombay to Dubai and transshipped from Dubai to a port in Latin America.

(g) Transshipment B/L: It has similar characteristic as the Through BIL except that in this case the first carrier acts only as an agent for effecting Transport shipment of cargo.

(h) Charter Party B/L: It covers shipment on a chartered ship. The contract or the letter of credit will specify the nature of bill of lading that the exporter has to procure for the importer. Generally, the importers insist on the "clean on board shipped" bill of lading, with the prohibition of the transshipment of goods. Bill of lading is a document of title that will enable the lawful holder of any of the original BIL to take delivery of the goods at the stipulated port of destination. Thus, a claimant of title to goods is required to surrender an original BIL (also popularly known as negotiable copy of B/L) for claiming goods from the shipping company or its agents.

The Design of Bill of Lading

The design for the bill of lading is based on the Standard Bill of Lading recommended by the International Chamber of shipping. A number of shipping lines in India's overseas trade are already issuing bills of lading on the ISO A4 size paper. However, in some case, these bills of lading are based on the old pattern. The Standard Bill of Lading included in the aligned series can be reproduced from the master by using the relevant mask. Bank forms of bills of lading are supplied by shipping companies to shippers who prepare these documents and present them for signature at the shipping is issued to the shipper by the Chief Officer of the ship through the port trust. While preparing, "To Order Bills of Lading care should be taken to mask the

Consignee box also. The words Unto Order may be typed in the Consignee box and the name and address of the Consignee given in the box for the Notify Party. The other details on the bill of lading will be completed by the office of the shipping company before the document is signed and handed over to the shipper in exchange for the mate's receipt.

Date of Bill of Lading

The date of issuance of bill of lading is very important for the following reasons, namely:

- To show whether the goods have been shipped on time, if the letter of credit stipulates a deadline for shipment.
- To meet the requirement that the documents must be presented for payment, acceptance or negotiation, as the case may be, within the validity of the credit and within 21 days from the date of issuance of the bill of lading, unless the credit specifies some other period of time. (If the credit stipulates a "received for shipment" bill of lading, or an "on board bill of lading", and the bill of lading shows shipment on board, the date of the bill of lading is the date of issuance. However, if the shipment "on board" is evidenced by means of a signed and dated notation to the effect on the bill of lading, the date of that notation is considered the date of issuance of the bill of lading).
- To determine the acceptability of the insurance document. Unless otherwise specified in the credit document or unless the insurance document clearly establishes that the cover is effective at the latest from the date of shipment, the insurance document must be dated not later than the date of issuance of the bill of lading.

Shipping Order

When the cargo is loaded on the ship, the commanding officer of the ship will issue a receipt called the mate receipt for goods. The mate receipt is first handed over to the port trust authorities so that all port dues are paid by he exporter to the port trust After making payment of all port dues, the merchant or the agent will collect the mate receipt from the port dues, the merchant or the agent will collect shipping agent only after the mate receipt has been obtained. The aligned shipping order and the Mate's Receipt have been prepared after examining the forms of the two documents issued by different shipping companies. The information required in these documents can be reproduced with great ease from the master. The issuance of these documents in the standard form will also facilitate the processing of documents at various stages, particularly at ports where exporters are required to submit shipping orders along with other documents to the port trust's office, as also the customs certification on various other documents on the basis of the mate's receipt.

In order, however, that the shipping order and the mate's receipt. In order, however, that the shipping order and the mate's receipt can be reproduced from the master, blank forms of this document will need to be made available to exporters by the shipping lines. Under the present commercial practice with regard to the issuance of the mate's receipt, this document was prepared by the ship's staff and signed by Chief Officer if the Ship after goods is loaded on the board. This document was required to be exchanged immediately for shipping Company's Bill of lading duly signed by an authorized officer of the company. With the inclusion of the mate's receipt in the aligned series of documents, it would be possible to roll it off at the master at the reproduction stage and keep it ready for the signature by ship's chief officer after the consignment is shipped. This will considerably reduce the time and money involved in the preparation of this document, but will require the blank standard forms of document to be made available to the shippers. If for some reasons it is not possible to do so, it is suggested that the shipping lines operating in India's overseas trade should issue the mate's receipt in the standard form for this document.

Shipping Bills

Shipping bills required by the customs. It is only after the shipping bill is stamped by the customs the cargo is allowed to be carted to the docks. The aligned shipping bill has been prepared after taking into consideration the requirement of Custom's Public Notice No. 39 which suggests a uniform shipping bill for different categories of exports, viz. free goods dutiable goods and goods under claim for drawback as the standard A4 size paper defies accommodation of all the information requirements as per this public notice. Some columns for duties and drawback particulars have been printed on the back of standard shipping bill. It is also not possible to accommodate all the declaration as per the public notice. Care has however been taken to incorporate those declarations which are material to exporting goods and claiming duty and drawback. Other declaration which has been not included in the standard shipping bill can be taken as implied. The name and address the custom house agent and also the CHA code No. can be printed in the box.

Provided for the Purpose

To facilitate identification of different category of shipping bills, it will be desirable to introduce uniform color schemes at all the ports. Identification will be easier and quicker a different category of shipping bills can be distinguished by the color of the form rather by the color of the letter print of the shipping bill.

Port Trust Document

Dock Challan/Export application/Dock trust copy of Shipping Bill Port trusts in India have prescribed their own documents for payment of port charges and handing shipment through their respective ports. Differing widely in sized and layout, these

documents are known differently at different ports, for example: Dock challan at Kolkata, Export Application in Chennai and Cochin and Port Trust Copy of Shipping Bill at Bombay. As these entire document essentially serve the same purpose, the introduction of a standard and uniform document for all the port, preferably with the same name (say 'Shipping Note') will go along way towards facilitating trade and reducing the cost involved in printing different size of document for different ports. The aligned Port Trust Document has been prepared after taking into consideration the information requirements of the port trust document of some of the major ports in the country. Information regarding receipt and shipment of cargo and payment of port charges can be recorded on the reverse of the document.

Marine Insurance Declaration form and Marine Insurance Certificate Policy

The standard Marine Insurance Declaration and the Marine Insurance Certificate are based on the format approved by Lloyd's and the Institute of London Underwriters. It is suggested that open cover/policy holders may be supplied with blank forms of these documents. These can be reproduced from the master and then sent to the appropriate office of General Insurance Corporation. The Insurance Certificates can be issued after completion of necessary entries and certification by the Corporation.

Bill of Exchange

One of the common methods of payments in international trade involves the use of Bills of Exchange (B/E), also known as drafts; provide documentary evidence of obligation and financial risk of the transaction is more widely spread. Foreign B/E is drawn by the exporter, calling upon the importer to pay or to accept a designated sum of money at a Determinable future time. Acceptance consists of an acknowledgement to this effect written across the face of the B/E and signed by the drawee (importer), obligating the importer to provide the payment of the amount stated within the period of time designated. When accepted, a draft becomes a trade acceptance. The method of payment provides the documentary evidence of document is readily transferable. A draft drawn without collateral document attached is known as a clean draft, while one with certain stipulated document of shipment, is known as a documentary bill. In export marketing, it is the documentary bill that is employed most commonly. There are three parties to B/E:

- The Drawer (Exporter): The person who executes the B/E, therefore, the person to whom the payment is due
- The Drawee (Importer): The person on whom the B/E is drawn and who is required to meet the terms of document
- The Payee (Exporter or Exporter's Bank): The party to receive the payment.

When Trade bills or Drafts are drawn in international Trade, the exporter may dispose of them by discounting, by borrowing, or by placing them for collection. The accepted draft can be discounted or sold to a Bank, or an advance loan may be

obtained from a bank, using the accepted draft and collateral documents as security. If the exporter is not seeking to discount or to borrow on a draft, the draft and all document attached are sent to the bank with instructions to send them abroad for collection. The Draft method of payment, as has been pointed out, places the final responsibility upon the exporter, as the exporter is subject to recourse until the drawee has paid. Therefore, the necessity, for securing adequate credit data on the drawee is apparent. In addition, the exporter runs the risk that the importer may reject the merchandise. In this case the importer will not accept the draft and the exporter is faced with the problem of deposing of the merchandise by forced sale abroad, shipment to another country or bringing the same home.

Mate's Receipt

Mate's receipt is a receipt issued by the Commanding Officer of the ship when the cargo is loaded on the ship. The mate's receipt is prima fade evidence that the goods are loaded in the vessel. The mate's receipt is first handed over to the f Port Trust Authorities. After making payment of all port dues, the exporter or his agent collects the mate's receipt from the Port Trust Authorities. The mate's, receipt is freely transferable. It must be handed over to the shipping company in order to get the bill of lading. Bill of lading is prepared on the basis of the mate's receipt.

Types of Mate's Receipts

(a) Clean Mate's Receipt: The Commanding Officer of the ship issues a clean mate's receipt; if he is satisfied that the goods are packed properly and there is no defect in the packing of the cargo or package.

(b) Qualified Mate's Receipt: The Commanding Officer of the ship issues a qualified mate's receipt, when the goods are not packed properly and the shipping company does not take any responsibility of damage to the goods during transit.

Contents of Mate's Receipt

(a) Name and logo of the shipping line.
(b) Name and address of the shipper.
(c) Name and the number of vessel.
(d) Name of the port of loading.
(e) Name of the port of discharge and place of delivery.
(f) Marks and container number.
(g) Packing and Container description.
(h) Total number of containers and packages.
(i) Description of goods in terms of quantity.
(j) Container status and seal number.

(k) Gross weight in kg. and volume in terms of cubic meters.

(l) Shipping bill number and date.

(m) Signature and initials of the Chief Officer.

(n) Significance of Mate's Receipt

- It is an acknowledgement of goods received for export on board the ship.
- It is a transferable document. It must be handed over to the shipping company in order to get the bill of lading.
- Bill of lading, which is the title of goods, is prepared on the basis of the mate's receipt.
- It enables the exporter to clear port trust dues to the Port Trust Authorities.

Airway Bill

In air carriage, the transport document is known as the airway bill (AWB). This document constitutes prima facie evidence of the conclusion of the contract of affreighment, of receipt of goods and of conditions of carriage. This document, therefore, performs the triple functions as a forwarding note for the goods, receipt for the goods tendered and authority to obtain delivery of goods. By itself, AWB is not a document of title, nor is this document transferable. However, AWB can be made into a transferable document by which it can be transferred to a third party by endorsement like the B/L. But, by and large, the business and commercial practice does not treat AWB as a document of title. The functions of AWB are similar to B/L in regard to its characteristics as an evidence of contract and as cargo receipt.

The AWB may be given as a receipt either for cargo given to the carrier pending shipment or for cargo loaded on board the aircraft. It may either be a clean receipt or a claused receipt. As regards the document of title characteristics, AWB is not a document of title, but this feature can be incorporated in it by making an Order AWB. General practices in the trade are to get the consignee named AWB. Consequently, goods are delivered to the consignee named in the AWB. The consignee will have to identify himself as the party named in AWB and goods may be delivered to him without any hindrance.

But if the interests of the exporter have not been protected, the consignee may get hold of the goods and may also not pay for them. Hence, exporters provide for a clause in the contract, which requires AWB to be made in the name of the paying bank, which will ensure exchange of goods for payment, by the importer. On the other hand, the importer can protect him against the seller's re-routing of the goods by obtaining the consignors copy of the AWB (marked "Original 3 for Shipper"), which is sent to him through the banking channel by the exporter along with other shipping documents.

Post Parcel Receipt

Post Parcel Receipt (PPR) evidences merely the receipt of the goods exported through postal channels to the buyer. It does not evidence the title to goods. The parcel is consigned to the consignee named in the contract between exporter and importer. The consignee can identify himself with the postal authorities at the destination and obtain delivery of the goods.

Insurance Policy or Certificate

Cargo Insurance Policy (also called marine insurance policy) provides protection to cargo owners in the event of loss or damage to cargo in transit. This loss or damage is caused by accidents, which cannot be known in advance and against which no protection is possible. These may be caused by natural calamities as well as by manmade accidents. It is, therefore, necessary that the risk of loss or damage to the cargo be minimized by obtaining a suitable insurance cover from an insurance company. Look at annexure where a specimen of marine insurance certificate has been given. There are different types of insurance policies for different categories of risks to be covered. We may emphasize that different types of risks to be covered will require different policies. Thus, the prevalent practice all over the world is to fix insurance on five types of policies. These are

(i) Institute Cargo Clauses A
(ii) Institute Cargo Clauses B
(iii) Institute Cargo Clauses C
(iv) Institute Strikes Clauses
(v) Institute War Clauses.

Among the three cargo clauses, Cargo clauses A provide the maximum cover; clauses B provide less cover while clauses C provide the least cover. When war and strikes clauses are attached to cargo clauses A, the cargo owners are given protection against all kinds of risks admissible under the law. It must be pointed out that insurance cover is given irrespective of the mode of transport used including sea, air, and road and rail carriers. Further, insurance cover can be secured for cargo going from the warehouse of the consignor, to the warehouse of the consignee.

Generally, the export contract determines the party (exporter or importer) that will procure insurance cover. In the F.O.B. and C&F contracts, importer obtains insurance cover after the goods have been laid on board on carrier. On the other hand, in a C.I.F. contract, it is the obligation of the exporter to insure goods. Sometimes, the export contract specifies the submission of 'insurance certificate' instead of the policy to bank for negotiation of documents. Insurance certificate, which is one stage prior to insurance policy, comes into being when a large and regular exporter obtains an open cover or concludes an open policy.

Under these two arrangements, insurance certificates are issued on declaring shipments by the exporter as and when these are effected. Insurance certificate

has an advantage as it cuts downtime in getting the insurance document from the insurance company.

NOTES

Combined Transport Document

Combined Transport Document (CTD) is a document for multi-modal movement of goods in container. The movement is carried out by more than one mode, e.g. rail and ship. The Foreign Exchange Dealers Association of India (FEDAI) has brought out brochure No.081 and 082 to facilitate export of goods in containers from specified inland centres in India. A CTD provides an alternative to establishing a series of separate and non-uniform contracts for each segment of the total transport process. It is acceptable for negotiation under L/C.

Bill of Entry

The bill of entry is a document, prepared by the importer or his clearing agent in the prescribed form under Bill of Entry Regulations, 1971, on the strength of which clearance of imported goods can be made.

When goods are imported in a particular country, the importer has to pay the necessary import duty. For this purpose, necessary information about the goods imported must be given to the customs authorities "in a prescribed form called bill of entry form. Bill of entry is a document, which states that. The goods of the stated values and description of the specified quantity have entered into the country from abroad. The bill of entry is drawn in triplicate. The customs authorities may ask the importer to supply other documents like invoice, broker's note and insurance policy, etc. in order to verify the correctness of the information supplied in the bill of entry form. For the purpose of giving information in the bill of entry form, goods are classified into three categories namely:

(a) *Free Goods:* Where the goods imported are not subject to any customs duty.

(b) *Goods for Home Consumption:* Where the goods imported for self Consumption.

(c) *Bonded Goods:* Where the goods imported are subject to customs duty, the goods are kept in bond till the duty is paid.

The importer has to fill up a separate bill of entry form for different classes of goods. In India, separate forms are not used but all the entries are made in one form. The free goods are marked as free in the entry form itself. The importer has to pay the duty before securing the possession of the goods.

Contents of Bill of Entry

(a) Name and address of the importer.

(b) Name and address of the exporter.

(c) Import Licence number of the importer.

(d) Name of the port/ dock where goods are to be cleared.
(e) Description of goods.
(f) Value of goods.
(g) Rate and amount of goods.

Statement of Facts

The Statement of Facts is a document which can be central to many disputes between Owners and Charterers (and others) as this is the document where relevant facts are recorded and the sequence of events can be followed. At the same time, the statement of facts is not the "only truth" and will in some cases only be signed by one or more parties "for receipt only" to indicate that either the whole, or at least part, of the statement is not necessarily agreed to. If a dispute continues to litigation, the facts of what transpired at a given time may, however, be difficult to establish and it would certainly be costly to obtain either witness statements or even direct evidence by hearing relevant witnesses – sometimes a very long time after the event. It is therefore important to be aware of the way the courts and arbitration panels view a statement of facts. It is certainly not the case that a statement of facts is treated as being in any way "absolutely final", but case law both before the ordinary courts and before arbitration panels has shown that the Statement of Facts is indeed treated as a very important piece of evidence.

3.9 PICKING PRODUCTS

Order picking can be defined as selecting and withdrawing goods or components from a store or warehouse to meet production requirements or to satisfy customer orders.

Earlier, it used to be the most time consuming and error prone part of material handling in the warehouse. One person picked the goods using a pick slip sorted on location with required product, quantity, batch number and expiry date indicated. In case of empty pick locations, the bulk location could be found in a separate computer file. Afterwards a second person checked and counted the products using a pick list on alphabetical order.

New Order Picking

Order picking has become much faster and easier with the help of "electronic pick list" which is loaded to the bar-code scanner. After checking the label of the fixed pick location, the required number of boxes is scanned and automatically checked for product, quantity, batch number and expiry date. In case of empty pick locations the bulk location for the product is shown on the display. As soon as an order line is completed, the next location is shown on the terminal display.

Now only one person does the picking and checking at the same time. Occasional deviations on stock level are sent back to the logistic system. The stock level is adapted, and a correct shipping document for the customer is printed. The handling of incoming goods has changed as well. The EDI dispatch note from the supplier is transmitted to the bar-code scanner in the warehouse. Incoming goods are checked on product, quantity, batch number and expiry date by scanning the labels.

The various steps involved in order inspection are:

- *Testing:* First one needs to think about what exactly he wants to control. This depends on what is critical for the product and the concerned business. Also, while deciding the control measures, one should consider the past quality issues faced and pick the ones that could have the greatest impact on the customers. The inspection plan should be made in line with what is at stake: the value and criticality of the product. A typical testing plan includes several functional items to check, with pass and fail criteria.
- *Inspection location:* Once the inspection plan has been made, one needs to define where to have it performed. Unless specific reasons dictate, inspections should take place at the supplier's site, after production is finished and before products leave the factory. That is where one can get the highest benefits in terms of reaction time and cost. In case of tight schedule, inspections can also be performed during the production cycle. Inspections at a later stage, before loading at the port of departure, or even upon arrival in the country of destinations, are quite specific and can be justified for various reasons, like sensitivity to transportation, impossibility to access the manufacturing site or consolidation with other materials, availability of special testing equipments.
- *Planning and ordering:* Before placing an order, the company must make sure that it has detailed testing plan defined and that it knows the total quantities to be shipped, the expected shipment date and the exact location (detailed address and contact information of the supplier). Most shipments just require a one day inspection, but it all depends on the number of samples tested (AQL level vs. total quantity) and the number/complexity of parameters to check (testing plan), it should be confirmed to you in advance by the inspection company.
- *Inspection report:* After the inspectors go on site to perform their duty, the company receives an inspection certificate with administrative information and the results of their findings: how many units they checked, what results they recorded and whether the lot(s) pass or fail. The ideal way is to hold the shipment until the report is received, so that containment actions can be taken, if required. The records of the inspection reports must be kept for future reference.

3.10 CONSOLIDATION

Consolidation of logistics requirements expressed by two or more customers. The consolidation of requirements means larger quantities can be ordered, resulting

NOTES

in economies of scale. Scheduling requirements are becoming increasingly more complex as more and more consignees consolidate and schedule inbound deliveries. Intelligent transportation management systems should reveal and suggest opportunities for inbound and outbound consolidation.

Inbound consolidation programs yield lower transportation rates over a large portion of the length of the major transportation segment, often building LTL loads in full truckloads in over-the-road transport and LCL loads into full-container loads in ocean or air shipping.

Outbound consolidation, or pooling, is another means of achieving freight savings. The practice is sometimes referred to as zone skipping in parcel shipping since full-container loads of parcels bound for destinations that are several USPS, UPS, or FEDEX zones away are shipped directly to those zones, skipping the transit through the zones along the way and avoiding the associated high transport rates. The consolidated loads are typically shipped directly to a sorting center or hub for the parcel handler of choice.

Deconsolidation and loading for local delivery takes place at the hub. A major third-party logistics company in joint venture with a major material handling systems supplier recently developed an entire logistics infrastructure to support zone skipping practices and economies in the Internet catalog retailing industry.

Speed, globalization and consolidation are all driving today's transportation marketplace. The 1980s and 90s also saw the emergence of a power shift in the distribution and logistics policy – which was controlled by manufacturers – to retailers. This was a result of the retail consolidation that took place in the United States and the emergence of mega-retailers such as Walmart, Home Depot, The Kroger Company, Target, Sears Roebuck & Co., and K-Mart, etc. While manufacturers had designed their distribution channels to distribute products evenly, with the emergence of these giant retailers manufacturers found that 15 to 20 percent of their accounted for 75 to 85 percent of their sales. This forced manufacturers to distribute their products in a manner that improved the efficiency of retailers. The logistics system, under these circumstances, needed to be designed around the customer rather than the manufacturer.

Check Your Progress

1. What do you mean by Product Life Cycle (PLC)?
2. What are the key steps involved in assembling?
3. State the meaning of macro forecasting.
4. What is the formula to compute reorder level?

3.11 TRANSPORT PACKAGING

Packaging serves two basic functions, i.e. marketing and logistics. In its marketing function, the package provides customers with information about the product and promotes the product through the use of color and shape. The package is "the silent salesman" and it is the final interface between the company and the consumers.

From a logistic perspective, the role of packaging is a means of ensuring the safe delivery of a product to the ultimate consumer in a sound condition at minimum overall cost.

The three P's of packaging are:

1. Protection
2. Preservation
3. Presentation.

The above three P's are applicable to consumer products. However, in the case of industrial products, presentation has a minor role.

To appreciate the place of packaging in the world economy, we must know what it is and how it functions. Packaging has been defined in several ways as cited below:

"A coordinated system of preparing goods for transport, distribution, storage, retailing and end use".

3.11.1 Consumer Packaging / Interior Packaging – Industrial / Exterior Packaging

We generally discuss two types of packaging, i.e., consumer packaging or interior packaging and logistical or exterior packaging. The marketing function is concerned with consumer packaging while the logistical packaging is of primary concern to the logistics manager.

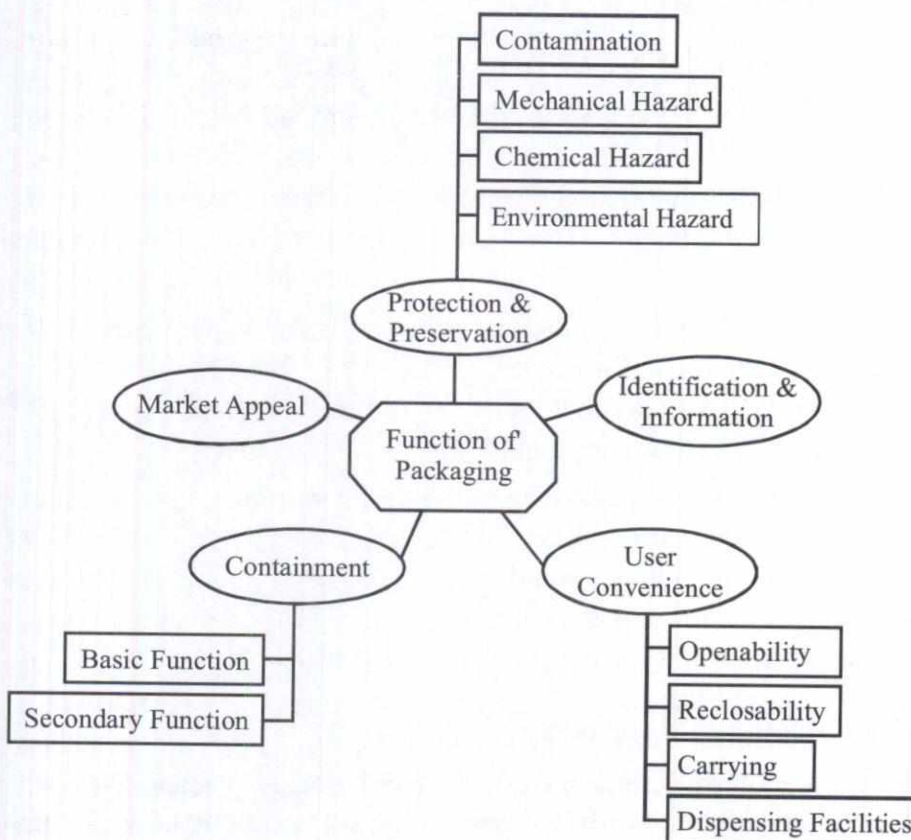


Fig. 3.3: Functions of Packaging

Logistical packaging has various functions. The primary functions are generally viewed as protection, utility, and communication by the traditional school of thought. According to this, these functions are related to the following:

1. Protection: Products must be protected from outside environmental effects. The packaging therefore, has to be made to stand harsh climatic conditions.
2. Containment: Products must be contained before they can be moved from one place to another.
3. Unitization: Permitting primary packages to be unitized into secondary packages, and then for secondary packages to be unitized into tertiary packages.
4. Apportionment: Reducing the output from industrial production to a manageable, desirable "consumer" size.
5. Convenience: Allowing products to be used conveniently.
6. Communication: The use of unambiguous, easily understood symbols.

The emerging school of thought sees the primary packaging functions to originate from the flow, the market, and the environment. The flow function is related to the logistical flows, and aims at rendering more efficiency in the logistics channel.

There are three objectives of the flow function. These can be described as:

1. The packaging should protect the product against stresses in the distribution.
2. It should identify the product with respect to contents, areas of application, quality and receiver, and
3. The packaging should facilitate product handling in the entire flow, including provision of packaging, packing, distribution, unpacking, disposal and return handling.

Although packaging is important to logistics and supply chain managers, it has an important function for marketing also. The market function consists of the revenue generating aspects – these relate most directly to sales packaging as well as attracting attention to a product and reinforcing a product's image.

Another function of packaging is to provide information to logistics people. This includes handling information. For example, if the package is easily damaged, or if it should be set in only one position, the package should say so. The weight on the package informs people lifting the package how to handle it. There may be information to determine what can rest on top of the package.

3.11.2 Packaging Materials

Numerous types of materials are used for logistics packaging, ranging from traditional wood, paper and board to different types of plastics. Traditionally, the main focus of logistical packaging in all industries has been on the implementation of one-way, disposable packaging systems. The use of harder packaging materials, such as wood or metal containers, was widespread. But these added considerable shipping weight,

which increased transport costs since transportation costs corresponded to the total weight of the consignment, including packaging.

1. **Plastic Pallets:** Plastic pallets life-cycle costs are comparable to traditional wooden pallets. They attempt to address the shortcomings of wooden pallets and are sanitary, lightweight and recyclable. However, the initial investment is greater. These materials are highly protective. In addition, their light weight helps to minimize transportation costs.
2. **Film-based Packaging:** Film-based packaging utilizing flexible materials to form actual shipping "packages" for consumer goods such as cans and bottles, furniture, appliances, and small vehicles has gained popularity. The new packages generally are combined with rigid materials to protect the product, e.g. plastic bottle trays have corner support for stacking, and appliances have panel protection on two sides to facilitate clamp handling. This type of packaging offers several advantages over traditional rigid packaging methods:
   (i) Systems operate automatically, reducing labor costs of manual boxing.
   (ii) A roll of film fits most product configurations equally well, eliminating the need to maintain inventories of various sized boxes.
   (iii) Shipment weight and cube is minimized because the package is essentially the same size as its contents.
   (iv) Reduces storage space requirements because a roll of film is smaller than pallets of empty or flattened boxes.
   (v) Damage is reduced compared with traditional rigid packaging methods.
3. **Blanket Wrapping:** Blanket wrapping is ideally suited for "nesting" irregular-shaped products like chairs that otherwise would have to be individually packed. Support decking is erected with plywood and bars that lock into trailer walls; products are stacked into the decking, and the product surfaces are protected with blankets. Blanket-wrapping concept is offered by many household goods carriers. It is best suited for truckload quantities of large rugged products e.g. laboratory equipment, sofas, tables, restaurant furnishings, or large fixtures. It eliminates use of package material and waste, minimizes transportation cube, and provides for easier unpacking of products.
4. **Cushioning Material:** Cushioning material is used to protect the product from shock, vibration, and surface damage during handling. The range of cushioning material available, which gives a comparison of different cushioning materials.
5. **Low Weight to Shipping Ratio Materials:** Materials are now available that provide the lowest weight-to-protection shipping ratio. Logistical packaging of low weight shipping ratios include low-density plastic film shrink-wrap,

NOTES

stretch-wrap, bags and barriers, high-density plastic boxes and totes, plastic strapping, corrugated materials and plastic foam cushioning and dunnage for fragile and irregular shapes.

6. **Returnable Containers:** Returnable containers have always been a part of logistical systems. Most reusable packages are steel or plastic. They require an integrated marking system to enable control of the movement of containers. The parties have to cooperate in order to maximize container usage. The economics of returnable package system is determined by of the number of shipment cycles and transportation costs versus the purchase and disposal cost of expendable containers.
7. **Legal Requirements:** When selecting packaging materials, companies today must consider environmental protection. Consumer advocates as well as government regulations have affected purchase and disposal costs of logistical packaging systems. With the emergence of reverse/return logistics, and the usage of reusable packaging solutions, the conditions for logistical packaging systems are changing.

3.11.3 Traditional Materials and Contemporary Usages

In general these materials are used to hold foods but they offer little in the way of barrier properties needed for a long shelf life. The exception is glazed pottery, which although heavy, has excellent properties.

1. **Leaves:** Banana or plantain leaves are the most common and widespread leaves used for wrapping foods, such as certain kinds of cheese and confectionery (guava cheese). Cornhusk is used to wrap corn paste or block brown sugar, and cooked foods of all sorts are wrapped into leaves. 'Pan' leaves are used for wrapping spices (India); they are an excellent solution for products that are quickly consumed, as they are cheap and readily available.
2. **Vegetable Fibers:** These natural raw materials are converted into fibers to produce the yarn, string or cord for packaging materials. Such materials, although categorized by the nature of the constituent fiber, have certain common characteristics. They are very flexible, to some extent resistant to tearing and permeable to water and water vapour. Their lightweight is an advantage in handling and transport.
3. **Bamboo and Rattan:** These are widely used materials for basket making. Bamboo pots cut out of the bamboo stem are also found.
4. **Coconut Palm:** Green coconut palm and papyrus leaves are frequently woven into bags or baskets, which are used for carrying meat and vegetables in many parts of the world. Palyra palm leaves are used to weave boxes in which items such as cooked foods are transported.
5. **Treated Skins:** Leather has been used for many centuries as a non-breakable container or bottle. Water and wine are frequently stored and transported in

leather containers (camel, pig and kid goat hides). Manioc flour and solidified sugar are also packed in leather cases and pouches.

6. **Earthenware:** Earthenware is used worldwide for storage of liquids and solid foods such as curd, yoghurt, beer, dried food, honey, etc. Corks, wooden lids, leaves, wax, plastic sheets, or combinations of these are used to seal the pots. If well sealed, it is a gas, moisture and lightproof container. Unglazed earthenware is porous and is very suitable for products that need cooling e.g. curd. Glazed pots are better for storing liquids e.g. oils, wine, as they are moisture proof and airtight, if properly sealed. All are lightproof and if clean, restrict the entry and growth of micro-organisms, insects, and rodents. One should ensure that the glazing of the earthenware does not contain lead. Most traditionally glazed pots do have lead glazing which, although they are not really harmful for serving coffee or soup, should not be used for acid drinks and other products which are to be stored for a long time.
7. **Metal:** Metal cans have a number of advantages over other types of containers including protection of the contents, they are tamperproof.

   However, the high cost of metal and the high manufacturing costs make cans expensive. They are heavier than other materials, except glass, and therefore, have higher transport costs.
8. **Glass:** Glass containers have the following advantages:
   - They are impervious to moisture, gases, odors and micro-organisms
   - They are inert and do not react with or migrate into food products
   - They are suitable for heat processing when hermetically sealed
   - They are re-useable and recyclable
   - They are re-sealable
   - They are transparent to display the contents
   - They are rigid, to allow stacking without container damage.

   The disadvantages of glass include:
   - Higher weight which incurs higher transport costs than other types of packaging
   - Lower resistance than other materials to fractures, scratches and thermal shock
   - More variable dimensions than metal or plastic containers
   - Potentially serious hazards from glass splinters or fragments in foods.
9. **Flexible films:** In general, flexible films have the following properties:
   - Their cost is relatively low
   - They have good barrier properties against moisture and gases
   - They are heat sealable to prevent leakage of contents
   - They have wet and dry strength

NOTES

- They are easy to handle and convenient for the manufacturer, retailer and consumer
- They add little weight to the product
- They fit closely to the shape of the food, thereby wasting little space during storage and
- Distribution.

These films are made up of material like cellulose, polypropylene or polyethylene, etc.

10. **Coated Films:** Films are coated with other polymers or aluminum to improve the barrier properties or to import heat salability. For example, nitrocellulose is coated on one side of cellulose film to provide a moisture barrier but to retain oxygen permeability.

3.11.4 New Emerging Packaging Alternatives

Today's issues of pollution and climate change have incited the development of more Earth-friendly products. Product packaging is one area where innovation and environmental concern have given rise to new developments and alternatives to traditional methods, some of which are biodegradable and sustainable.

Recycled Materials

Though recycling only slightly reduces people's impact on the environment, it does slow down the growth of landfills and eases the pollution problem. Many items now contain recycled materials, but in varying degrees. It is ultimately up to the consumer to check labels and purchase products that contain the most reused materials. It is also important to do your own recycling. Things like paper, aluminum, glass and certain types of plastics are commonly recycled.

Biodegradable Materials

Scientists have been able to develop plastics made from plants called bioplastics. These products are derived from the starches in plant material and are completely recyclable; they are also biodegradable and developed from renewable resources. The use of this technology could decrease our environmental impact, though critics claim the farming and pesticides needed to grow the necessary crops doesn't make it a better solution.

Treated Plastics

Scientific research has led to the development of chemicals that allow plastics to biodegrade. An additive used during plastic manufacturing allows the product to maintain its durability until put under a combination of stresses like water, heat and pressure. A small amount of the original plastic is always left behind besides carbon dioxide and water.

Returnable Containers

Return goods handling is complex because it involves moving small quantities of goods back from the customer rather than to the customer as the firm is accustomed. Many logistics systems have a difficult time handling this type of movement. Costs tend to be very high. The cost of moving a product, backward through the channel from the customer to the producer may be as much as nine times as high as moving the same product from the producer to the customer. Therefore, this significant cost and service area is beginning to receive more attention.

Intermediate Bulk Containers

An Intermediate Bulk Container (IBC) is a container used for transport and storage of fluids and bulk materials. The construction of the IBC container and the materials used are chosen depending on the application, i.e. there are various types available in the market:

- Plastic composite IBC Container
- Steel IBC Container
- Stainless Steel IBC Container

Customers looking for a more efficient container for large quantities should turn to Intermediate Bulk Containers (IBC). IBCs decrease customer costs through reduced handling, storage space and shipping expenses. IBCs are easy to use, transport and recycle. IBC Container Services provides customers with a complete IBC care management service. Standard IBC includes a high-density polyethylene bottle in a solid or tubular reinforced steel cage that is attached to a pallet. Pallet options vary from wood, steel or plastic. Sturdiness, cost savings, logistic improvements are some of the criteria for choosing intermediate bulk containers.

Pallet Pools

A pallet (sometimes called a skid) is a flat transport structure that supports goods in a stable fashion while being lifted by a forklift, pallet jack, front loader or other jacking device. A pallet is the structural foundation of a unit load which allows handling and storage efficiencies. Goods or shipping containers are often placed on a pallet secured with strapping, stretch wrap or shrink wrap and shipped.

3.11.5 Types of Packaging

Depending on the use of packaging materials, the packaging for export products can be classified into the following categories:

(i) Plastic packaging,

(ii) Paper based packaging,

(iii) Combined plastic and cardboard packaging,

(iv) Miscellaneous packaging

(i) Plastic Packaging: Various kinds of plastic materials are used for packaging of the export products. The most common plastic materials used for packaging are polyethylene (PE) and polypropylene (PP). Polyethylene film has two main varieties of consumer packaging namely, low density polyethylene (PE-LD) film and high-density polyethylene (PE-HD).

PE-LD film is used for making plastic bags, shrink wrapping and stretch wrapping. This film is very useful to provide protection against moisture and dirt. It does not however, provide any mechanical protection. The exporters can use the plastic bags made of PE-LD films for wrapping articles to package products like T-shirts, table cloths, napkins, leather hand bags etc. These products are placed inside the plastic bags, which are transparent and are suited for retail display.

In shrink-wrapping, a specially treated film is loosely wrapped around the product(s) and then shrunk with heat to form a tight package. This kind of wrapping is suitable for solid products like sets of drinking glasses, a group of egg-cups, and sets of table mates and so on.

In stretch wrapping, a thin film is tightly wound around the product, often in several layers. When the wrap is completed, the stretched film tries to return to its original size, thereby holding the product or group of products tightly in place.

PE-HD also used for making plastic bags because it provides better resistance against moisture and fats than PE-LD. PE-HD is more expensive than the PE-LD. Both the forms of plastic films are environment friendly as they are easy to recycle.

The PP films are stronger than the PE films. It is better to use bags made of pp films for packaging textiles and garments as these can be printed or can be used in plain form as well. PP films are better than PE films in terms of providing better moisture protection but these films are more expensive. Another alternative to PP films is polyvinyl chloride (PVC) material. But from environmental point of view, PVE materials should not be used, as these are not recyclable.

Plastic boxes can be used especially as retail packages for jewellery and other small, precious products. They are also well suited to add appeal to products such as embroidered handkerchiefs or tablecloths, souvenir dolls, etc. They come in square, oval or round shapes; printed or plain.

(ii) Paper Based Packaging: Paper-based materials are used as wrapping, as paperboard cartons or corrugated fiberboard boxes. The various types of paper can be coated with plastics, waxed or treated with anti corrosion agents. Paper is either produced from virgin wood fibers or recycled fibers. The former is stronger than the latter.

- Paper wrappings provide protection against dust and light, but do not provide mechanical protection.
- Paper absorbs moisture when the surrounding air is more humid than the paper, and it gives up moisture when the surroundings are drier. Thus, paper wrappings

can be used to some extent as moisture protection inside the packages as well to slow down the harmful effect of moisture in the air. One should use tissue paper instead of newspaper to protect the surface of products.

- Paperboard Folding Cartons: Folding cartons made of different paperboard qualities can be used as retail packaging for variety of reasons. Folding cartons are economical; they can be shaped in almost unlimited number of ways; they can be printed very decoratively; properly designed cartons provide mechanical protection to products; they protect products against dust and light, and are easy to handle in retail shops. The most important property of such cartons is their stiffness.
- Paperboard Cans: The paperboard can is a form of paper based retail packaging, which is quite inexpensive and is used to pack different types of products. These cans can be lined inside with aluminum foil or plastic films to provide additional protection against humidity. Such cans are used for packaging toys, puzzles, games, tennis balls and other sports goods.

(iii) Combined Plastic and Card Board Packaging: There are three main types of packaging that combine paperboard and plastic materials. These are as follows:

- Skin packaging,
- Blister packaging, and
- Plastic bags with a paperboard card.

These packages are used mainly for retail packaging of pens, small toys, gift items lightweight souvenir articles. This type of packaging has several advantages: the product is visible through the plastic; the paperboard card can be printed to provide information and to add sales appeal; especially small products are not lost or stolen easily.

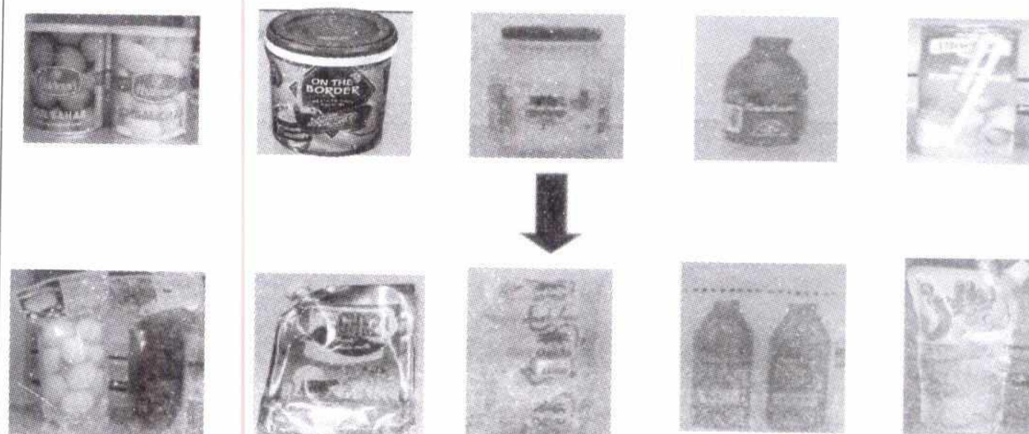
- Skin Packaging: Skin packaging is a form of packaging where the product is first placed on a paperboard card with heat seal coating. It is suitable for products that need protection against moisture and are not very heavy or expensive. It is however, not suitable for products that are sensitive to heat.
- Blister Packaging: In this form of packaging, the product is first placed into a pre-formed plastic blister. Then a paperboard card is attached to it. Blister packaging can be used for a variety of products such as toys, pens, textile articles and decorations etc. It should not be used for those products, which are too delicate as there is always some space for movement inside the blister. This might damage the delicate product.
- Plastic Bags with a Paperboard Card: In this form of packaging, a paperboard card is attached to the plastic bags through a hole in the bag. This adds sales appeal to plain plastic bags and is always very cost-effective. The paperboard card can be printed on adding information and attraction.

The plastic bags can be made of any materials but PP film should be preferred in the interest of better product presentation.

(iv) Miscellaneous Packaging: Exporters can make use of wood, textiles, straw, leaves or any other locally available materials for packaging of the goods. Specially made wooden boxes can be used to package traditional ceramics, wood carvings, various gift items, pieces of jewellery etc. If wooden packaging is used as a gift or retail package, it has to be made with as much care as the product itself. This means that it should be smooth, clean, and dry, with any hinges or locks well made and functioning. It is also important to pack the product with sufficient cushioning material into a wooden package, so that the product is not damaged during transport. Before using wood as packaging material, one should always check whether there are any regulations concerning the treatment or certification of wooden materials. Paperboard cartons or boxes can be covered or lined with cloth to give them a more decent appearance. Bags made of jute, cotton, velvet or other fabric could be used for the packaging of products, which do not need much protection. Baskets made of local materials can also provide very attractive packaging for handicraft products.



Fig. 3.4: Innovative food packaging



Rigid packaging is giving way to flexible packaging in the form of stand-up pushes, report pouches, spouted pouches which offer similar benefits at lower weight and cost.

Fig. 3.5: Rigid to flexible

3.11.6 Packaging Economics

In the process of selecting the primary packaging for a particular product four basic questions must be answered:

1. What must the packaging achieve?
2. What types of packaging are available?
3. What is the pros and cons of the available packaging in terms of our desired achievement?
4. What is the resulting cost of using a particular in relation to the packaging operation and the physical distribution system which will be employed to get the product to the ultimate user?

Once we have answered the first three questions, which are largely technical, the final decision will be made on economic grounds; preferably on the basis of the total cost equation and not on the cost of the package that the customer carries home. A cost comparison between possible systems will focus on the following facts:

- Packaging Material (or container) prices, Machinery Cost, Machine Efficiency, Machine Speed, Line Efficiency, Labor Costs and inflation etc.

3.11.7 Cost Involved in Types of Packaging

1. Primary packaging: It involves unit packaging of commodities namely biscuits, tablets, bottles, etc.
2. Secondary packaging: The above primary packages are unitized into secondary packaging, e.g. duplex board cartons used for strip packages, corrugated board cartons used for small bottles, etc.
3. Shipping/bulk packages: These packages actually travel by itself containing the primary or primary/secondary packages.

Thus when one considers the packaging cost all the above packages have to be taken into consideration.

3.11.8 Conventional Methods of Determination of Packaging Costs

1. Affordable cost
2. Percentage cost of product
3. Based on functions which it is expected to perform.

Affordable cost restricts the amount to be spent on packaging as a result of which at times, the quality of packaging will be inadequate. In case of percentage cost spent on packaging, it may result in over packaging or unnecessary increase in packaging cost. The ideal method of incurring packaging cost is to design the package on the functional properties which we expect the package to perform.

The following examples will illustrate the minimum cost involved in designing packages:

1. Glass shell or glass container used for drinking purpose: The package design for the above product should prevent breakage of the glass during its transit. Even if it is a cheap glass item, there is a minimum cost involved to prevent breakage. At times it could work out to a high percentage of the cost of the product.
2. Electric bulb/florescent tube: The package design for the above product in addition to preventing breakage should create brand image and also give some protection against vibration.
3. Light machine up to 3 to 5 tonnes: With the current development in light commercial vehicles, machines are transported by just positioning them in the vehicles without any packaging, thus involving zero packaging cost.
4. Heavy machines: The only cost that is involved in transportation is to prevent the movement of the machine on the carrier. No packaging cost is involved.
5. Consumer cost Consumable durables: In view of the current trend in marketing, consumer products have to act as "silent salesmen/marketing tool". With increased standards of living, there is an increase in need for food products, viz., and ready to eat, processed and semi-processed. The customer is prepared to pay for the benefits which accrue from the specialized.

3.11.9 Packaging Cost Constituents

- Order processing cost
- Packaging material and package cost
- Storage and handling cost of empties
- Quality control cost.
- Packaging line operation cost storage and Warehousing cost of filled packages
    - ❖ Freight cost
    - ❖ Insurance cost
    - ❖ Cost due to package/product spoilage and loss
    - ❖ Replacement cost
    - ❖ Cost due to loss of goodwill affecting sales and market share effect of package on sales.

3.12 PACKING

Packing of goods for supplying to the customer is a crucial factor of logistics or consequently the Supply Chain Management. An attractive and safe packing not only provides safety from damage to the goods during transportation, but also enhances its future sales and helps in establishing long term relations with the customer.

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3.12.1 Types of Packing Boxes

There are different types of packing materials available for the manufacture of the boxes for the transportation of the goods from the exporter's country to the importer's country. Depending on the use of materials, the export boxes can be classified into the following categories:

(i) Corrugated fiberboard boxes

(ii) Wooden boxes and crates

(iii) Miscellaneous boxes such as gunny bags or-steel drums.

1. **Corrugated Fiberboard Boxes:** Corrugated fiberboard boxes are the most commonly used boxes for the transport packing of the goods for export. These boxes are used for large number of products such as fresh fruits and vegetables; consumer packed manufactured goods; handicrafts; garments; household appliances; leather goods and so on. Such boxes are equally good for export by both air and sea. The advantage of these boxes is that these can be tailor-made even to the smallest possible sizes.

The different types of corrugated fiberboard are as follows:

(i) Single faced board

(ii) Double faced board (Single wall)

(iii) Double faced board (Double wall)

(i) Single Faced Board: More than 90 % of all the corrugated boxes are made of single wall or double-faced board. The single faced double wall is used for heavy weight products. The weight of a cardboard box should be about 30 kg and in no case, it should exceed 50 kg. If it is essential to carry more weight, then the box should be made in such a way that it enables mechanical handling.

Transport boxes can also be made of solid fiberboard. The advantage of using the fiberboard is that it is easy to manufacture; can be economically coated with various materials to make it more resistant against moisture. Thus, if maximum protection against moisture is needed, then the exporter should use the boxes made of fiberboard.

(ii) Double faced Board (Single wall): It is also known as Double Face. The structure of this board is formed by one corrugated inner member glued between two flat facings.

(iii) Double faced Board (Double wall): The structure of this type of board is formed by three flat facings and two intermediate corrugated members.

2. Wooden Boxes and Crates: Though corrugated fiberboard boxes or the solid fiberboard boxes have replaced wooden boxes for most products, yet wooden boxes and crates remain important alternatives for transport packing for export.

This is particularly true for heavy and vulnerable products. The dimensions of the boxes should be decided keeping in view the need for safe transportation of the export product.

The exporter should be considering the following points as regards the selection of wood for making the boxes:

(i) **Wood density:** It is an important factor as it determines the strength of the wood and how it holds the nails. One should use wood with the densities varying between 350 kg per cubic meter and 650 kg per cubic meter, as it will have sufficient mechanical strength. Higher the density of the wood, higher the strength of the wood; and vice versa.

(ii) **Moisture content:** The moisture content of the wood used for packing should be around 20% as it would protect the wood against decay by mould and decay or any other kind of fungus. If the moisture content is more than 20% then the wood should be first dried up before making the boxes.

(iii) **Quality of the wood:** It depends on the number of knots, splits, decay or grain irregularities present in the wood. The wood with faults in the form of knots, splits, and decay or grain irregularities should not be used for transport packing for export.

(iv) **Type of nails:** Proper quality of nails should be used, as the holding capacity of the boxes would depend upon the holding power of the nails. Grooved or threaded nails have the maximum holding capacity. It should also be ensured that correct number of nails is driven in the wood allowing for proper spacing between two nails.

3. **Miscellaneous Boxes:** Sometimes, steel drums or the jute bags can also be used for export packing. For example, liquids can be exported in the steel drums and agricultural items can be transported in jute bags.

3.12.2 Procedure for Packing Goods

The first step in packing the goods for export is to select the right kind of box for packaging the goods and then select the right kind of box for transport of the goods. The aspects relating to selection of packages have already been discussed. In this section, the discussion is focused on packing the goods for transport. The exporters should ensure that the goods are protected during transport and handling. This requires a detailed study of the products to determine the requirements for packing the goods. Some of the products and the type of protection needed by them are given in Table 3.2:

TABLE 3.2: Type of product	
Product Types	**Requirements**
Textiles and garments	Protection against moisture, insects, dirt and light.
Wooden products and Lacqerware	Protection agents scratching, moisture, microbes, insect's breakage, light.
Leather products	Protections against moisture, loss of flexibility by drawing, stain and surface scratching.
Stoneware, article of bones, glassware, shells, ceramics etc.	Protection against breakage
Metal products	Protection against corrosion, tarnishing, surface scratching and deformity in metal product due to pressure.
Paper products	Protection against moisture and light
Straw and similar product	Protection against moisture and breakage
Jewellery	Protection against getting lost or stolen and breakage

Actual packing can start as soon as the products have been carefully prepared and all the necessary packing materials are ready. The exporters should follow the points given below to ensure that the customer gets the goods in good condition.

Articles with a delicate surface, such as polished metal, polished wood, leather, etc. should be protected from scratching by wrapping them into a material with a soft surface. The wrapping material can be e.g. polyethylene film, tissue paper or cloth.

The exporter should not use old newspaper for wrapping. It has a hard surface, which may damage a delicate product. The printing ink can also stain products.

When products are packed into retail packages and/ or transport packages, it is important to make sure that the products cannot move inside the package during transport. When there is no empty space between the product and the packing, the combination is much stronger than when the packing alone has to endure all the stacking and transport stresses.

Closing and Sealing of the Boxes

The exporter should be very careful at the time of closing of the export boxes as most often bad closing is the most common cause of packing failure. The export boxes can be closed using the various closing materials namely:

1. Adhesives
2. Paper and plastic tapes
3. Stapling and stitching
4. Plastic and metal strapping

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Self adhesive, plastic tapes are very much in use because of easier application in closing and sealing of corrugated paperboard boxes. It should be ensured that PVE material is not used for plastic tapes for the simple reason that the PVE tape creates difficulty in the recycling of corrugated fiberboard boxes. Polypropylene (PP) tapes should be used in preference to PVE as boxes with PP tapes do not present any problem in recycling of the corrugated fiberboard boxes. The most common plastic strapping used for fiberboard boxes is 13 mm wide PP strapping with a thickness of 0.5 to 0.9 mm. The strapping made of nylon and polyester endures tension longer than PP material. Steal strapping should be used for heavier transport packing such as wooden boxes and crates or fiberboard bins.

3.13 MARKING

The exporters should properly mark the export boxes in order to ensure their proper identification, correct handling and delivery to the consignee. Marking on the export boxes is thus, very important part of the logistics for transportation of the goods to the buyer. Marking on the export boxes not only ensures their safe transportation and delivery but it also helps proper handling of the cargo by the people.

3.13.1 Types of Marking

There are three different types of markings namely:

(i) Shipping marks
(ii) Information marks
(iii) Handling marks

1. **Shipping Marks:** These contain all the information, which is necessary to deliver the boxes to its correct destination. These marks are the same as given on the' transport documents.
2. **Information Marks:** These provide additional necessary information as regards buyer's code number, quantity, dimensions and information for storage of the boxes. This information need not be given on the transport document.
3. **Handling Marks:** These are the instructions given on the boxes for their proper handling at different stages during the transport chain starting with warehousing/ storage of the goods in the factory of the exporter through the business premises of the importer. These marks are generally given in pictorial form.

All the three types of marks should be written at the appropriate place on the boxes to avoid any kind of confusion and to make sure correct handling and delivery of the goods.

The markings on the export boxes for sea shipments and air shipments are different from each other. Internationally recommended shipping marks as used in sea shipments consist of following four points and should be placed in the middle of the at least two sides of the box. These information points are as follows:

1. Short name of the buyer. For example, goods being shipped to Lionel Trains Incorporated can be written as LTI.
2. Reference number agreed to between the exporter and the importer.
3. Destination i.e., the port of discharge.
4. Box number/total number of boxes in the shipment.

As far as handling marks are concerned, these should be used only when they are really needed. For example, there would be no need for handling marks in the case of boxes containing textiles, handicrafts, leather goods, furniture items etc. In case it is necessary to indicate the handling marks, then such marks should be stated on all sides of the boxes.

The use of handling marks does not actually guarantee that the boxes are handled correctly. Nevertheless, their use offers two advantages namely: First, they at least allow the goods to be handled correctly. Secondly, if handling marks have not been used when required, insurance will not cover the loss caused by incorrect handling.

As far as shipment by air is concerned, the International Air Transport Association (IATA) has prescribed a standard format of the label to be given on the export boxes. The mandatory information points relate to:

1. The name of the airline
2. The air way bill number
3. Destination in the form of three-letter IATA code for transport e.g. DEL for Delhi
4. Total number of boxes included in the shipment and the box number e.g., 3/25. This indicates that this box number is 3 and the total number of boxes is 25.

Besides, the full name and address of the receiver and the sender should also be marked on the boxes.

3.13.2 Features of Marking

Effective marking on the export boxes for transportation should be big, bold and brief. The exporter should ensure that the markings are:

1. Legible i.e., it should be possible to read the markings from a distance. The exporters should preferably use the color black for this purpose.
2. Durable i.e., the exporter should use ink that is permanent, waterproof, and resistant to humidity, sunlight and friction. It should be ensured that the marks do not fade away or are smudged.
3. Visible i.e., the marks should be placed on at least two sides of the boxes, front and back.
4. Communicative i.e., the markings should convey the message as clearly as possible and it should be as short as possible. One may use pictorial forms

if possible. Handling marks should be placed on the extreme left and right position of the box.

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3.14 PREPARING OUTBOUND DOCUMENTATION

Outbound logistics is the management of transport and storage for finished goods dispatched by a business. Outbound processing comprises the preparation of goods to be delivered from a warehouse to a receiving location. Outbound processing within the scope of warehouse management typically comprises activities like the notification of goods to be supplied from a warehouse to a customer for which the outbound delivery serves as the reference document, picking, packing, physical goods issue in warehouse, loading, goods issue and goods issue posting to IM, advising advanced shipping notifications to business partners and, obtaining a proof-of-delivery from the receiving business partner. Supply chain operations and network extend beyond domestic boundaries and global boundaries of all countries. A logistical exercise originates at the buyers end and involves multiple agencies including buyer, seller, 3PL freight forwarder, transporters at various juncture, shipping lines, airlines, various governmental agencies, customs departments at various locations and financial institutions like banks to complete the entire supply chain cycle.

Smooth flowing of materials in a journey originating at one point and going through the entire cycle of exports and imports to reach a point of consumption would mean engagement and interaction with all of the above agencies who have a stake in the said transaction. Need for decision making concerning financial, commercial, technical, operational matters pertaining to shipments arise at various times in the cycle, which demands that the 3PL, the logistics carrier, the buyer, the supplier are actively engaged and have visibility to information and documentation for the smooth flow across various transit points. In fact in faultless logistics operations the documentation and information flow should precede physical movement of goods.

Documentation becomes important not only for the physical logistics operations involving multiple agencies engaged in the entire chain, the financial, trading and accounting processes of the both buyer and seller organizations and partner banks involved also depend upon the entire set of documentation pertaining to each transaction to be able to recognize the sale, recognize value of consignment and effect necessary payment. Accounting practices of the organizations require detailed documentation as per book keeping practices and norms.

Finally goods and services are recognized and identified at every stage only with the set of authenticated documentation showing ownership based on which the customs allow them to be exported or imported into or out of the country. There are many more aspects like terms of carriage by the carrier coupled with insurance liabilities and coverage which call for set of documentation covering specific aspects of each transaction.

Therefore the entire supply chain transaction involves set of standardized documentation from buyer and seller, from 3PL carriers and documentation as required by customs at exporting country and importing country coupled with trading or bank requirements documents. The entire set of documents and the terms of trade have been developed and standardized across all countries to facilitate international trade.

INCO terms and EDI approved / enabled standardized documentation has made Export and Imports smoother and hassle free, thus cutting down on bottlenecks and delays arising out of documentation requirements.

Today software applications have built in standardized documentation templates and modules in their offerings which reduce the amount of time and effort involved in preparing documentation. ERP modules contain the documentation formats as an integral part of its internal processes. 3PL logistics providers work with various software applications which have shipping documentation built into its operational processes and offer track and trace with documentation visibility to customers on the web. Filing documents with customs has been EDI enabled. Electronic documentation has become a part of operations amongst all agencies. However at customs and banking counters, original documents are required to be produced as negotiating and legal valid documents for shipments to be cleared through.

A supply chain manager needs to be aware of the complete set of documentation requirement along with the various aspects to be able to design processes and documentation control mechanisms. Errors in documentation will lead to financial damage, delays in delivery and performance which is what every manager aims to avoid.

3.15 SHIPPING OUT BY LOADING INTO CONTAINERS

The driver of intermodal transportation has undoubtedly been the container, which permits easy handling between modal systems:

Container: A large standard size metal box into which cargo is packed for shipment aboard specially configured transport modes. It is designed to be moved with common handling equipment enabling high-speed intermodal transfers in economically large units between ships, railcars, truck chassis, and barges using a minimum of labor. The container, therefore, serves as the load unit rather than the cargo contained therein, making it the foremost expression of intermodal transportation. The usage of containers shows the complementarily between freight transportation modes by offering a higher fluidity to movements and a standardization of loads. Thus, the relevance of containers is not what they are – simple boxes – but what they enables; intermodalism. The reference size is the 20 foot box, 20 feet long, 8'6" feet high and 8 feet wide, or 1 Twenty-foot Equivalent Unit (TEU). Since the great majority of containers are now forty foot long, the term Forty-foot Equivalent Unit (FEU) is also used, but less commonly.

Containers are either made of steel (the most common for maritime containers) or aluminum (particularly for domestic) and their structure confers flexibility and hardiness.

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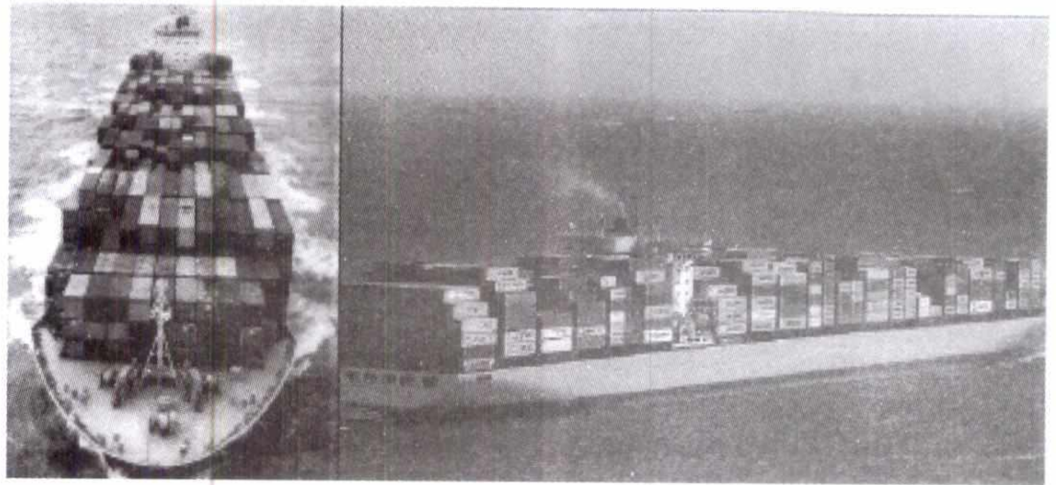


Fig. 3.6: Containers

The development of intermodal transportation and containerization are mutually inclusive, self strengthening and rely of a set of driving forces linked with technology, infrastructures and management. One of the initial issues concerned the different sizes and dimensions of containers used by shipping lines, which were a source of much confusion in compiling container shipping statistics. A lift could involve different volumes since different box sizes were involved. As a result, the term TEU (Twenty foot Equivalent Unit) was first used by Richard F. Gibney in 1969, who worked for the Shipbuilding & Shipping Record, as a measure of comparison. Since then, the TEU remains the standard measure for containerized traffic. Another factor behind the diffusion of the container is that an agreement about its base dimensions and latching system was reached through the International Standards Organization (ISO) within 10 years of its introduction.

From these specifications, a wide variety of container sizes and specifications have been put in use. The most prevalent container size is however the 40 foot box, which in its 2,400 cubic feet which carry on average 22 tons of cargo. International containers are either owned by shipping lines or leasing companies. In the United States, a large amount of domestic containers of 53 foot are also used. Double stacking of containers on railways (COFC: Containers On Flat Cars) has doubled the capacity of trains to haul freight with minimal cost increases, thereby improving the competitive position of the railways with regards to trucking for long-haul shipments. While it is true that the maritime container has become the work horse of international trade, other types of containers are found in certain modes, most notably in the airline industry. High labor costs and the slowness of loading planes, that require a very rapid turnaround, made the industry very receptive to the concept of a loading unit of standard dimensions.

The maritime container was too heavy and did not fit the rounded configuration of a plane's fuselage, and thus a box specific to the needs of the airlines was required. The major breakthrough came with the introduction of wide bodied aircraft in the late 1970s. Light weight aluminum boxes could be filled with passenger's baggage or parcels and freight, and loaded into the holds of the planes using tracking that requires little human assistance. Containerized traffic has surged in the 1990s, underlining its adoption as a privileged mean to ship products on international and national markets. Containerization leans on growth factors mainly related to globalization, substitution from break bulk and more recently the setting of intermediate transshipment hubs. The diffusion and adaptation of transport modes to containerization is an ongoing process which will eventually reach a level of saturation. Containers have thus become the most important component for rail and maritime intermodal transportation.

The Containership or Boxship is the great success story of the last 40 years. General cargo was historically carried in dry cargo vessels, without any particular specialization. Cargo loading and unloading was always a slow, labourious task, due to the varying shapes, sizes, weights and fragility of the numerous cargoes being carried on any one vessel. The idea of standardizing the carrying box, or container at 20 feet long was a breakthrough that allowed for vessels to be designed to carry these standard sized boxes, and for dockside equipment also to be designed to lift, stack and store these specific shapes. In 1937, a New Jersey truck driver named Malcolm McLean, sitting in his truck at the New Jersey Docks suddenly had a novel idea. Instead of large numbers of stevedores having to manually load cargo, why not create a standard shaped box into which goods can be handled in a standard way. His idea took 20 years before the first container transit was undertaken (with his own money, because no ship owners would listen to his idea). In 1969 Malcolm McLean retired as a multi-millionaire.

So, from a 'back of the fag-packet' idea was born the container ship. Initially, these were small vessels of up to 10,000 DWT, carrying no more than a few hundred TEU (Twenty foot Equivalent Units), but have grown in size as the success and economies of these vessels have become more obvious. Today's container ships are being built to take 9,500 T.E.U., with plans afoot to build 10-12,000 TEU ships. As well as the Twenty foot container, many goods need larger boxes, so there is a larger standard sized container, the FEU (Forty Foot Equivalent Unit).

On board a modern containership, the complex method of loading the TEU and FEU in an order that will facilitate offloading at the other end is now largely computerized. These vessels are built for speed, and can reach upwards of 28 knots, moving cargoes around the globe. Through transport or inter-modal transport means that these containers can be offloaded from a ship, and rapidly loaded onto trains or onto container lorries for onward transport to the place of delivery.

3.15.1 Advantages of Containerization

Among the numerous advantages related to the success of containers in international and hinterland transport, it is possible to note the following:

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1. **Standard transport product:** A container can be manipulated anywhere in the world as its dimensions are an ISO standard. Indeed, transfer infrastructures allow all elements (vehicles) of a transport chain to handle it with relative ease. Standardization is a prevalent benefit of containerization as it conveys a ubiquity to access the distribution system and reduces the risks of capital investment in modes and terminals.

   The rapid diffusion of containerization was facilitated by the fact that its initiator, Malcolm McLean, purposely did not patent his invention. Consequently all segments of the industry, competitors alike, had access to the standard. It necessitated the construction of specialized ships and of lifting equipment, but in several instances existing transport modes can be converted to container transportation.

2. **Flexibility of usage:** It can transport a wide variety of goods ranging from raw materials (coal, wheat), manufactured goods, and cars to frozen products. There are specialized containers for transporting liquids (oil and chemical products) and perishable food items in refrigerated containers (called "reefers" which now account for 50% of all refrigerated cargo being transported). About 1.1 million TEUs of reefers were being used by 2004. In many developing countries, discarded containers are often used as storage, housing, office and retail structures.

3. **Management:** The container, as an indivisible unit, carries a unique identification number and a size type code enabling transport management not in terms of loads, but in terms of unit. This identification number is also used to insure that it is carried by an authorized agent of the cargo owner and is verified at terminal gates. Computerized management enables to reduce waiting times considerably and to know the location of containers (or batches of containers) at any time. It enables to assign containers according to the priority, the destination and the available transport capacities. Transport companies book slots in maritime or railway convoys that they use to distribute containers under their responsibility. As such, the container has become a production, transport and distribution unit.

4. **Economies of scale:** Relatively to bulk, container transportation reduces transport costs considerably, about 20 times less. While before containerization maritime transport costs could account between 5 and 10% of the retail price, this share has been reduced to about 1.5%, depending on the goods being transported. The main factors behind costs reductions reside in the speed and flexibility incurred by containerization.

Similar to other transportation modes, container shipping is benefiting from economies of scale with the usage of larger containerships (The 6,000 TEUs landmark was surpassed in 1996 with the Regina Maersk and in 2006 the Emma Maersk surpassed the 14,000 TEU landmark). A 5,000 TEU containership has operating

costs per container 50% lower than a 2,500 TEU vessel. Moving from 4,000 TEU to 12,000 TEU reduces operating costs per container by a factor of 20%, which is very significant considering the additional volume involved. System-wide the outcome has been costs reductions of about 30% by the use of containerization.

1. **Speed:** Transshipment operations are minimal and rapid, which increase the utilization level of the modal assets. A modern container ship has a monthly capacity of 3 to 6 times more than a conventional cargo ship. This is notably attributable to gains in transshipment time as a crane can handle roughly 30 movements (loading or unloading) per hour. Port turnaround times have thus been reduced from 3 weeks to less than 24 hours since it is uncommon for a ship to be fully loaded or unloaded along pendulum routes. It takes on average between 10 and 20 hours to unload 1,000 TEUs compared to between 70 and 100 hours for a similar quantity of bulk freight. With larger containerships, more cranes can be allocated to transshipment. 5 to 6 cranes can service a 5,000 TEU containership implying that larger ship sizes do not have many differences in loading or unloading time. A regular freighter can spend between half and two-third of its useful life in ports. With less time in ports, containerships can spend more time at sea, thus be more profitable to operators. Further, containerships are on average 35% faster than regular freighter ships (19 knots versus 14 knots).
2. **Warehousing:** The container limits damage risks for the goods it carries because it is resistant to shocks and weather conditions. The packaging of goods it contains is therefore simpler, less expensive and can occupy less volume. Besides, containers fit together permitting stacking on ships, trains (double stacking) and on the ground. It is possible to superimpose three loaded and six empty containers on the ground. The container is consequently its own warehouse.
3. **Security:** The contents of the container are anonymous to outsiders as it can only be opened at the origin, at customs and at the destination. Thefts, especially those of valuable commodities, are therefore considerably reduced.

3.15.2 Drawbacks of Containerization

In spite of numerous advantages in the usage of containers, some drawbacks are also evident:

4. **Site constraints:** Containerization implies a large consumption of terminal space. A containership of 5,000 TEU requires a minimum of 12 hectares of unloading space, while unloading entirely its containers would require the equivalent of about 7 double-stack trains of 400 containers each. Conventional port areas are often not adequate for the location of container transshipment infrastructures, particularly because of draft issues as well as required space for terminal operations. Many container vessels require a draft of at least

14 meters (45 feet). A similar challenge applies to container rail terminals, many being relocated at the periphery of metropolitan areas. Consequently, major container handling facilities have modified the local geography of container by forcing relocation to new sites at the periphery.

5. **Infrastructure costs:** Container handling infrastructures, such as gantry cranes, yard equipment, road and rail access, represent important investments for port authorities and load centers. For instance, the costs of a modern container crane (portainer) are in the range of 4 to 10 million $US depending on the size. Several developing countries cannot afford these infrastructures with local capital and so have difficulties to participate effectively in international trade as efficient load centers unless concession agreements are reached with terminal operators.
6. **Stacking:** The arrangement of containers, both on the ground and on modes (containerships and double-stack trains) is a complex problem. At the time of loading, it becomes imperative to make sure that containers that must be taken out first are not below the pile. Further, containerships must be loaded in a way to avoid any restacking along its numerous port calls where containers are loaded and unloaded.
7. **Management logistics:** The management of containerized operations is very information intensive. This requires high levels of information technology for the recording, repositioning and ordering of the containers being handled.
8. **Empty travel:** Maritime shippers need containers to maintain their operations along the port networks they service. The same number of containers brought into a market must thus eventually be relocated, regardless if they are full or empty. On average containers will spend about 56% of their 10 to 15 years lifespan idle or being repositioned empty, which is not generating any income but convey a cost that must be assumed in one way or the other.

Either full or empty, a container takes the same amount of space on the ship or in a storage yard and takes the same amount of time to be transshipped. Due to a divergence between production and consumption, it is uncommon to see equilibrium in the distribution of containers. About 2.5 million TEUs of empty containers are stored in yards and depots around the world, underlining the issue of the movement and accumulation of empty containers. They represent about 20% of the global container port throughput and of the volume carried by maritime shipping lines. Most container trade is imbalanced, and thus containers "accumulate" in some places and must be shipped back to locations where there have deficits (mostly locations having a strong export function). This is particularly the case for American container shipping. As a result, shipping lines waste substantial amounts of time and money in repositioning empty containers.

- **Illicit trade:** By its confidential character, the container is a common instrument used in the illicit trade of drug and weapons, as well as for illegal immigrants. Concerns have also been raised about containers being used for

terrorism. These fears have given rise to an increasing number of regulations aimed at counteracting illegal use of containers. In 2003, following US inspection requirements the International Maritime Organisation (IMO) introduced regulations regarding the security of port sites and the vetting of workers in the shipping industry.

The US, itself established a 24 hour rule, requiring all shipments destined for the US to receive clearance from US authorities 24 hours prior to the departure of the vessel. In 2008, the US Congress has passed a regulation requiring all US-bound containers to be electronically scanned at the foreign port of loading, prior to departure. Needless to say, these measures incur additional costs and delays that many in the industry oppose. Yet, the advantages of containerization have far outweighed its drawbacks, transforming the global freight transport system.

3.16 CUSTOMER FACILITATION TRACKING OUTBOUND SHIPMENTS

The Outbound Shipment provides information on outbound shipments made from sales orders and shipment containers. It provides Sellers, node users, and Carriers with information necessary to ensure on-time shipment of the correct orders. An order becomes an outbound shipment when an order release is packed and it is physically ready to be shipped by the shipping node. A shipment details the ship to address, dimensions, shipment charges, carrier information, and information about the lines shipped. An outbound shipment as an entity can be used in a delivery plan by attaching it to a load.

The process for creating a shipment starts when order lines are released for shipment, which creates an order release, and completes when the shipment is delivered. This process includes:

- Creating a shipment
- Routing a shipment
- Outbound shipment pipeline
- Outbound shipment console

Outbound Shipments Features and Functions

- Cargo reference control
- Cargo planning and scheduling
- Load building
- Route planning
- Multiple PO consolidation
- Shipment consolidation

NOTES

- Load tendering
- Bill of landing generation
- Traffic file management
- Supplier cross referencing
- Document generation and control (hard copy and EDI)
- Carrier control
- Advanced shipping notification (ASN)
- EDI carrier dialogue

Check Your Progress

State Whether the Following Statements are True or False

5. Combined Transport Document (CTD) is a document for multi-modal movement of goods in container.
6. Order picking can be defined as selecting and withdrawing goods or components from a store or warehouse to meet production requirements or to supply customer orders.
7. A pallet is the structural foundation of a unit load which allows handling and storage efficiencies.
8. The marketing function is concerned with consumer packaging while the logistical packaging is of primary concern to the logistics manager.
9. Plastic pallets packaging utilizing flexible materials to form actual shipping "packages" for consumer goods.

3.17 SUMMARY

- In this unit we have discussed about the Logistics and Marketing interfaces. Product life cycle (PLC) is a key marketing concept that affects the relationship between logistics and marketing. For different stages of PLC i.e., introduction, growth, maturity and decline, different level of logistics support is required by marketing.
- Fulfillment is all of the activities needed to provide customers with ordered goods and services, including related customer services. Logistics is defined as the operations involved in the efficient and effective flow and storage of goods, services, and related information from point of origin to point of consumption.
- Assembling is done in two steps: (a) completion of a complicated process in assembling process general products in workshop, (b) completion of uncomplicated process in assembling the ordered products in distribution point.
- Sales forecasting is a difficult area of management. Most managers believe they are good at forecasting. However, forecasts made usually turn out to be wrong! Marketers argue about whether sales forecasting is a science or an art.
- Order picking can be defined as selecting and withdrawing goods or components from a store or warehouse to meet production requirements or to satisfy customer orders. Order picking has become much faster and easier with the help of "electronic pick list" which is loaded to the bar-code scanner.
- Packaging serves two basic functions, i.e. marketing and logistics. In its marketing function, the package provides customers with information about the product and promotes the product through the use of color and shape. From a logistic perspective, the role of packaging is a means of ensuring the safe delivery of a product to the ultimate consumer in a sound condition at minimum overall cost.
- Packing of goods for supplying to the customer is a crucial factor of logistics or consequently the Supply Chain Management. Marking on the export boxes

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is thus, very important part of the logistics for transportation of the goods to the buyer. Marking on the export boxes not only ensures their safe transportation and delivery but it also helps proper handling of the cargo by the people.

- Outbound logistics is the management of transport and storage for finished goods dispatched by a business. Outbound processing comprises the preparation of goods to be delivered from a warehouse to a receiving location.
- A large standard size metal box into which cargo is packed for shipment aboard specially configured transport modes. It is designed to be moved with common handling equipment enabling high-speed intermodal transfers in economically large units between ships, railcars, truck chassis, and barges using a minimum of labor. The Outbound Shipment provides information on outbound shipments made from sales orders and shipment containers.

3.18 KEY TERMS

- **Order Preparation:** Order preparation involves the customer or salesperson filling out an order form, communicating the order through telephone, or selection from a computer menu.
- **Order Transmittal:** Order transmittal involves transmitting the order from where it has been received to the place where it can be handled.
- **Manual Order:** Manual order means mailing of order by the customer or sales representative to the point of order entry.
- **Macro Forecasting:** Macro forecasting is concerned with forecasting markets in total.
- **Micro Forecasting:** Micro forecasting is concerned with detailed unit sales forecasts.
- **Bills of Lading:** A bill of lading is a document issued and signed by a shipping company or its agents acknowledging that the goods mentioned in the bill of lading have been duly received for shipment.
- **Mate's Receipt:** Mate's receipt is a receipt issued by the Commanding Officer of the ship when the cargo is loaded on the ship.
- **Combined Transport Document:** Combined Transport Document (CTD) is a document for multi-modal movement of goods in container.
- **Order Picking:** Order picking can be defined as selecting and withdrawing goods or components from a store or warehouse to meet production requirements or to satisfy customer orders.
- **Pallet:** A pallet is the structural foundation of a unit load which allows handling and storage efficiencies.
- **F-S-N:** Fast-Moving, Slow-Moving and Non-Moving Items.
- **VED:** Vital, Essential and Desirable.

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- **PLC**: Product Life Cycle
- **PPR:** Post Parcel Receipt
- **IBC:** Intermediate Bulk Container

3.19 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Product life cycle (PLC) is a key marketing concept that affects the relationship between logistics and marketing. For different stages of PLC i.e., introduction, growth, maturity and decline, different level of logistics support is required by marketing.
2. Assembling is done in two steps: (a) completion of a complicated process in assembling process general products in workshop, (b) completion of uncomplicated process in assembling the ordered products in distribution point.
3. Macro forecasting is concerned with forecasting markets in total. This is about determining the existing level of Market Demand and considering what will happen to market demand in the future.
4. Re-order Level = Maximum consumption x Maximum Re-order Period
5. True
6. True
7. True
8. True
9. False

3.20 QUESTIONS AND EXERCISES

Short Answer Questions

1. Write short note on areas of logistics and marketing interaction.
2. What are the types of forecasting?
3. What are the various types of bill of lading?
4. What are the new emerging packaging alternatives?
5. Write down the types of packaging.
6. What are the features of marking?

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Long Answer Questions

1. Briefly explain logistics as a support function of order fulfillment.
2. Discuss the assembling and labeling from multi-storage points and delivery.
3. Provide insight into invoice or sales documentation.
4. Briefly explain the picking products and transport packaging.
5. Discuss the packing and marking of product.
6. Explain preparing outbound documentation.

UNIT 4 EXIM LOGISTICS

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Structure

4.0 INTRODUCTION

Carrefour: Managing the Global Supply Chain

"To embrace the challenge of building a worldwide company, not only geographically international, but truly global in vision, leveraging each country's experience as we optimize our resources and technology."

- Carrefour's Global Vision, Annual Report 1997.

"Carrefour is the world's most successful international retailer. Walmart has no track record outside North America."

- Jaime Vasquez, an industry analyst at Salomon Smith Barney (SSB) in London.

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France based Carrefour (the second largest retailer in the world) is believed to be the most global retailer with its operations spread out all over the world. Managing a global supply chain is a very difficult and complex task.



In the late 1990s, France based Carrefour Group (Carrefour), the second largest retailer in the world embarked upon a $170 million project to standardize its business systems and processes across the world.

Among other activities, the project involved the institution of shared service centers (SSCs) in each country in which the company operated, so that various activities such as purchasing and management of suppliers could be conducted at a single location. Analysts said that by establishment of SSCs, Carrefour would be able to significantly improve the efficiency of its supply chain. Carrefour used advanced technology to manage its various supply chain processes including procurement, logistics and warehouse management. The company used cross docking and radio frequency equipment to transport the goods quickly from warehouses to the retail stores. Carrefour also embarked upon an exercise to centralize its procurement and distribution activities in the late 1990s. This exercise covered all its global operations so as to reduce costs and enhance distribution efficiency.

The company relied on third-party logistics providers (3PLs) to manage its supply chain in most of its global operations.

It had global and regional tie ups with reputed firms for this purpose. Analysts felt that by managing its global supply chain operations well, Carrefour had emerged as one of the leading retailers in the world.

Carrefour usually followed a 'direct procurement strategy' acquiring food products and other goods directly from the manufacturers. The company purchased goods from local manufacturers in all the global markets in which it operated. Approximately 90% of the goods at Carrefour stores in developing markets were procured locally. Explaining the rationale, Daniel Bernard (Bernard), Chairman and CEO of Carrefour said, "Retail is the image of the country in which it lives. You have to adapt your food and other products to the local culture." Local purchases enabled the company to keep its costs low as well as shorten its supply

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chain. However, in a few countries, for instance, in Japan, Carrefour depended on wholesalers for almost 40% of the items supplied to it.

Carrefour used the Electronic Data Interchange (EDI) for procurement, which required electronic linking of stores, warehouses and suppliers through computer networks. The company initially used EDI to receive orders from the stores and receive dispatch notices.

Source: *http://www.icmrindia.org*

In the previous unit, we dealt with the concept of logistics and marketing interaction, logistics-marketing interface, logistics as a support function of order fulfillment, assembling and labeling from multi-storage points and delivery. The unit also discussed about the logistics as an interface of market (sales) forecasting, stock level management, logistics as a support function of procurement and vendor facilitation, invoice or sales documentation, picking products, transport packaging, packing, marking, preparing outbound documentation, shipping out by loading into containers and customer facilitation tracking outbound shipments.

This unit will also helps you to understand global logistics, export logistics-special aspects of ExIm logistics, picking, customs act, 1962, documentation, shipment, delivery to distribution centers, distributors and lastly the retail outlets, import logistics, bonded warehousing, multimode transport, and terminal networks: types and roles. To make the learning easier, we will take the help of globally recognized best practices.

Exports mean selling the home country's goods/services in a foreign country. If goods made in India are sold in France, then those goods are exported to France. Imports are just the opposite of exports. Here, goods/services are purchased and brought in from another country. This means that if we use goods made in France in India, then such goods are imported from France.

Exports and imports are both part of international trade between nations. All of us enjoy the fruits of global trade. The very fact that we are able to buy French perfumes, Australian beer, Swiss watches and confectionery, European gadgets, Chinese toys and lots more made in other countries, bears testimony to our experience of international trade.

4.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand global logistics and export logistics
- Discuss the picking and customs act, 1962
- Explain documentation, shipment and delivery to distribution centers
- Describe distributors and lastly the retail outlets
- Know import logistics and bonded warehousing
- Learn multimode transport and terminal networks.

4.2 GLOBAL LOGISTICS

4.2.1 Logistics in a Global Economy

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The operating challenges faced by global logistics systems vary significantly within operating regions. The North American logistics vision is one of open geography with extensive demand for land-based transportation and relatively limited need for cross-border documentation. The European logistician, on the other hand, views operations from a perspective characterized by relatively compact geography involving numerous political, cultural, regulatory, and language barriers. The Pacific Rim logistician has an island perspective that requires extensive water or air shipment to transcend vast distances. These different perspectives require logistics managers who operate globally to develop a wide variety of capabilities and expertise.

In the past, an enterprise could survive with a unique North American, European, or Pacific Rim logistics perspective. Specifically, an enterprise could achieve substantial success through regional logistics capability. While this is still true for some firms, those that desire to grow and prosper are finding a regional business strategy is no longer adequate. In order to allow manufacturing and marketing scale economies to support market growth, enterprises are developing global logistics expertise. The extended global capabilities must include international transportation, cultural diversity, multi-language capability, and extended supply chain operations.

Global operations increase logistics cost and complexity. In regards to cost, estimated 1991 logistics expense for industrialized nations exceeds $2 trillion, or 11.7% of combined gross domestic product (GDP).

In terms of complexity, global operations increase uncertainty and decrease capability to control. Uncertainty results from greater distances, longer lead times, and decreased market knowledge. Control problems result from the extensive use of intermediaries coupled with government intervention in such areas as customs requirements and trade restrictions.

These unique challenges complicate development of an efficient and effective global logistics system. However, in today's economy, globalization cannot be avoided. As such, logistics must resolve these concerns and complications. Fortunately, there are forces that both motivate and facilitate globalization and necessitate borderless logistics operations. This first section examines the forces motivating globalization, identifies major barrier to borderless operations, and summaries the resulting logistics challenges.

Forces Driving the Borderless World

There are many forces driving firms to enter the international arena. These forces serve as both motivators and facilitators. Enterprises are motivated to expand global

operations to grow and survive. Global operations are also facilitated through developing technologies and capabilities. The five forces driving global operations are economic growth, supply chain perspective, regionalization, technology, and deregulation.

Economic Growth

Since World War II, firms in many industrialized economies have enjoyed annual double-digit percentage increases in revenue and profit. This growth trend resulted from a combination of improved market penetration, and increased market size resulting from high birthrates. Since the population of major industrial countries has stabilized or even declined, most of these traditional strategies no longer support sustained revenue and earnings growth.

The decline in economic growth in industrialized countries occurred at about the same time manufacturing and logistics productivity began to increase as a result of new technology deployment. The result was excess capacity. Given this environment, the most direct means for an enterprise to increase revenue and profit is through global expansion into other developed regions and into developing nations. Such expansion requires the integration of global manufacturing with marketing capabilities and the initiation of logistics support for new business locations. Thus, the search for growth and profit is a fundamental force driving enterprises to serve global markets.

Supply Chain Perspectives

The second force driving global logistics is widespread adoption of a total supply chain perspective by manufacturers and large-scale distributors. Historically, managers have focused on reducing procurement cost and manufacturing expense within their own enterprise. Expenses incurred by other channel members typically were not viewed as important when making logistics or product sourcing decisions.

Firms traditionally sought logistical control by performing as many essential activities as possible internally. Internal performance typically resulted in private warehouses, transportation, and information processing.

While such privatization maximized control, it also increased the assets required to support logistics operations. Commitment of assets to logistics is not critical from the viewpoint of profitability. However, in terms of "return on assets" (ROA), it is desirable to reduce the capital deployed to support any business activity. Logistics managers found that they could reduce capital deployed by outsourcing the performance of a wide range of logistics activities. As a result, the use of service specialists became common practice during the 1980s.

This experience with outsourcing proved critical in terms of financial global expansion. While attempting to develop cost-effective operations to support global expansion, firms capitalized on their earlier learning experience. They were willing to develop alliances with global suppliers that could provide expertise and quality logistics service at a reasonable cost for activities such as international freight

consolidating and forwarding, international transportation, documentation, and facility operations.

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Regionalization

As indicated above, the need to develop new markets to sustain growth was a primary force that encouraged firms to seek customers outside their "home" country. The typical initial choices of expansion-minded firms were countries in nearby geographic regions. To promote regional trade and protect trading partners from outside competition, countries began to formalize partnerships through treaties. Examples of such agreements are the European Community (EC 92) and the North American Free Trade Agreement (NAFTA). The Dean Foods sidebar illustrates such a regional strategy. Ohmae's triad view suggests that the world is evolving into three major trading regions: Europe, North America, and the Pacific Rim. While each region does not restrict trade with other regions, the agreement strongly promotes and facilitates intra-regional trade.

Such regionalization is resulting in an industrialized triad with each part having relatively equal population and economic strength. Intra-regional trading is facilitated by reducing tariffs, minimizing customs requirements, developing common shipping documentation, and supporting common transportation and handling systems. The ultimate goal is to treat intra-regional movements as if they had the same country origin and destination.

Technology

Communication and information technology represents a fourth force stimulating international operations. Mass market communications exposed international consumers to foreign products, thus stimulating a convergence of global needs and preferences. "Whatever their nationality, consumers in the triad increasingly are exposed to similar motivations seek the same kind of life-style, and desire similar products. They all desire the best products available, at the lowest price possible". The demand for blue jeans in Asian and Eastern European countries, and athletic shoes throughout the world, has increased as a result of widespread media exposure. Cable News Network (CNN), USA Today, and other satellite communications promote a variety of products and stimulate demand on a global basis.

A second expansion force resulting from technological development is an increased capability to exchange information facilitated by widespread availability of computers and communication networks. Historically, international commercial documentation such as orders, delivery requirements, and customs forms were typically hard-copy paper that required extensive time to transfer and often contained many errors. Prior to advanced communication technologies, the performance cycle from order commitment to order receipt was nine months to replenish Adidas shoes in the United States from the Orient. The total performance cycle has been reduced to three months through the use of enhanced information technology that speeds

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order requirements communication, production scheduling, shipment scheduling, and customs clearance.

As the world becomes more real-time oriented, demand for world-class products and services will increase. Although politicians regularly stress the importance of "homegrown" products, the average consumer neither knows nor cares where the product is actually produced as long as it offers the best perceived value. For example, while the Honda Accord is typically viewed as a foreign automobile by United States consumers, it has one of the highest percentages of domestic content of any car assembled or sold in that country. Honda has been among the top five selling automobiles in the United States over the past five years. The preferences of well-travelled and knowledgeable citizens are influencing governments to rethink import restrictions and the consequences of political border barriers.

Deregulation

Deregulation of a number of key industries is a fifth driving force toward a borderless world. The two primary deregulated industries are finance and transportation.

Financial Deregulation

Global finance and foreign exchange are facilitated through a number of changes in regulations and procedures. Government, in the form of institutions such as the United States Export-Import Bank, and multi-government-sponsored credit institutions, such as the International Monetary Market, serve to extend and guarantee long-term export and import credits above and beyond individual bank capabilities. This not only increases the availability of funds, but reduces individual bank risk and increases trade potential.

The International Monetary Market (IMM) also provides the mechanism to exchange currencies and trade futures at market rates. Although the IMM originated in 1972, its impact increased significantly in 1987 with the establishment of a global electronic automated transaction system. Global financial information standards are a key factor in the international trade increase.

Another factor is the elimination of the gold standard as support for individual currencies. The United States dropped the gold standard in the early 1970s, which allowed other major currencies to float against the dollar through the IMM agreement. Fixed monetary rates had previously restricted trade by setting artificially high levels for major currencies of industrialized nations. High exchange rates made international trade expensive because of the artificially high cost of goods. Floating rates facilitate free currency movement and tend to synchronize global booms and recessions. In addition, interest rates, capital markets, and the overall investment climate are more interlinked and interdependent given global monetary systems.

The free flow of currency exchange is particularly evident in contemporary financial markets. The United States dollar, for example, facilitates the global flow

of goods while being only minimally affected by differences in individual country wage rates. In fact, these markets support an annual volume of foreign currency exchange in equity and capital transactions that is 300 times larger than the annual goods exchange between triad members. The difference in magnitude between currency and goods exchange explains why directional shifts in goods exchange have only a minor impact on exchange rates.

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Transportation Deregulation

The United States initiative to deregulate transportation during the early 1980s has gradually spread throughout the globe. Despite the fact that overall global deregulation has advanced at a slower rate than in the United States, three global changes concerning intermodal ownership and operation, privatization, and cabotage and bilateral agreements have occurred. The global trade impact of each is discussed.

Historically, there have been regulatory restrictions concerning international transportation ownership and operating rights. Carriers have traditionally been limited to operating within a single transportation mode with few joint pricing and operating agreements. Specifically, steamship lines could not own or manage land based operations such as motor or rail carriers. Without joint ownership, operations, and pricing agreements, international shipping was complicated as a result of the number of parties involved. International shipments typically required multiple carriers to perform and manage the freight flow. In addition, carrier operations were typically limited. For example, foreign-owned carriers could not operate in many nations located between domestic origins and destinations. There were also limitations for carriers when they made pickups or deliveries in foreign countries. Specifically, government rather than market forces determined the extent of services foreign-owned carriers could perform. Although some ownership and operating restrictions remain, marketing and alliance arrangements among countries have substantially improved transportation flexibility. Similar restrictions were removed in most other industrialized nations. An example of the increased flexibility is United Parcel Service's (UPS) current capability to serve over 190 countries in a seamless manner via ownership, joint marketing, and operating agreements. Internally, UPS may provide service by carrying a package with a combination of rail, motor, air, and water transportation. Such agreements facilitate international shipment efficiency and trade, as well as increase the possibility of one-stop logistics services.

A second transportation stimulant to globalization has been increased carrier privatization. Historically, many international carriers were owned and operated by "home country" governments to promote trade and provide strategic reserves in case of war.

In an effort to improve service, many governments have privatized major carriers, while others are considering it. For example, the United Kingdom and Canada are in the process of privatizing air, motor, and rail carriers. The European Community is completing other large-scale privatization and infrastructure projects to

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meet increased business demands resulting from EC 92 initiatives. Forced to operate in the competitive marketplace, privatized carriers must improve service and be more consistent and competitively priced. The result is facilitated international trade.

Changes in cabotage and bilateral service agreements are the third regulatory factor influencing international trade. Cabotage laws require passengers or goods moving between two domestic ports to utilize only domestic carriers. For example, water shipments from Los Angeles to New York must use a United States carrier. The same cabotage laws restrict a Canadian driver from transporting a back-haul load to Detroit once a shipment originating in Canada is unloaded in Texas. Cabotage laws protect domestic transportation industries, even though they reduce overall transportation equipment utilization.

The European Community is relaxing cabotage restrictions to increase trade efficiency. It is projected that reduced cabotage restrictions will save United States corporations 10 to 15 percent in intra-European shipping costs. European Transport Ministers have reached agreement to open Europe as a single transport market by 1998. Several prominent United States trucking companies, such as Yellow Freight and Carolina Freight, have opened offices and entered into operating agreements with European carriers. Although NATA does not allow motor carrier cabotage, American trucking firms will be able to carry international cargo into Mexican Border States by the end of 1995 and throughout Mexico by the end of 1999. Mexican trucking firms will be allowed reciprocal treatment in the United States on the same timetable.

Bilateral service agreements require that a balanced number of carriers registered in each country be authorized to operate between origin and destination points. Such agreements serve to limit the total number of international carriers that serve key specific gateways. In addition, bilateral agreements may result in duplicate service and excess capacity in low-volume gateways. The consensus is that traditional bilateral agreements are shifting toward multilateral arrangements with separate considerations for passenger and freight transport. This inter-governmental arrangement and cooperation will yield improved transport service while simultaneously reducing transportation rates. The net result should favor international trade.

4.2.2 Barriers in the Way of Global Logistics

While many forces facilitate borderless operations, some significant barriers continue to impede global logistics. Three barriers are significant: markets and competition, financial barriers, and distribution channels. Global logistics management must balance the cost of overcoming these barriers with the potential benefits of international trade to achieve the actual benefits of successful international operations. Each barrier is described.

Markets and Competition

Perceived and real market and competitive barriers include entry restrictions, information availability, pricing, and competition. Entry restrictions limit market access by placing legal or physical barriers on importing. An example of a physical barrier is the European practice of local presence, which requires that market-based

manufacturing or distribution facilities be established prior to market access. An example of a legal entry barrier is the Japanese practice of allowing local retailers to "vote" on acceptance of new retailers, particularly foreign ones, into the market.

Poor information availability is another global logistics barrier. In addition to limited information availability regarding market size, demographics, and competition, little coordinated information is available defining import and documentation requirements. Typical requirements differ by government and even by specific case. Most governments require that documentation be completed and processed prior to shipment. In many cases, if the documentation is not flawless, the shipment is delayed or impounded. While correct documentation is important for all shipments, it is critical for international transportation.

Pricing and the related topic of tariffs are other marketing-related barriers. International pricing is strongly influenced by exchange rates. The situation confronted by United States distributors of German automotive parts illustrates how exchange rates affect logistical requirements. The common practice is to delay ordering replenishment parts until as late as possible to reduce risk and investment. However, when the German mark rises compared to the United States dollar, as it did in the early 1990s, a more cost-effective strategy may be to stock up on parts and take advantage of the favourable exchange rate.

Tariffs represent another traditional barrier. Tariffs were originally designed to protect domestic industries by increasing prices on imported goods. Tariffs complicate international trade in two ways. First, tariffs are an additional cost element that must be considered when evaluating foreign sources of supply. Second, tariffs are political; subject to quick change as government policy alters.

Tariffs serve as a barrier to logistics planning since trade flow direction and volume can change overnight. While the NAFTA and EC 92 eliminate many tariffs within North America and Europe, substantial tariffs remain between regions.

GATT (General Agreement on Tariffs and Trade) is a multilateral trade mechanism for improving trade relations among signatory trading partners. It is designed to increase trade consistency, improve trade relations, and reduce bilateral agreements. A fundamental GATT principle requires that tariff reductions negotiated between any two members be extended to all members. Since GATT was founded in 1948, there have been eight "rounds" of negotiations resulting in an increase in tariff consistency. However, despite this effort, tariff differentials still exist and remain effective barriers for international logistics.

While most international firms have experience in highly competitive environments, different rules concerning competitive governance also serve as global logistics barriers. For example, the United States government fosters private enterprise, and, as such, it maintains an arm's-length relationship with business and prohibits price collusion. However, these economic policies are not a global standard.

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Global competitors, such as United States-based Boeing, must contend with firms such as Airbus Industries that have a home field advantage in Europe because of the French government's majority, ownership. The competitive barrier is a combination of a lack of awareness regarding global rules and the necessity to conform to the norms of particular geographic regions.

Financial Barriers

The financial barriers to global logistics result from forecasting and the institutional infrastructures. While it is not easy to forecast in any situation, it is particularly difficult in global environments. The domestic forecasting challenge is to predict unit or dollar sales based on customer trends, competitive actions, and seasonality. In a global environment, these challenges are compounded by exchange rates, customs actions, and government policy complexities.

Institutional infrastructure barriers result from major differences in how facilitating intermediaries such as banks, insurance firms, legal counselors, and transportation carriers operate. Services and capabilities that are taken for granted in the United States are often not available or are administered differently in foreign countries. The banking, insurance, and legal systems as well as the omnipresent transportation systems common in the United States are in their infancy in most less developed countries. To illustrate this point, interviews with managers in Eastern Europe indicate that payment receipt and processing can take two or three weeks, even within a single city! These long processing times often occur in economies where monthly inflation exceeds 5 percent. Such delays significantly complicate order processing and increase financial and inventory risk.

The combination of financial and institutional uncertainty makes it difficult to plan product and financial requirements. As a result, logistics managers must allow for additional inventory, transportation lead time, and financial resources to operate globally.

Distribution Channels

Distribution channel differences such as infrastructure standardization and trade agreements are a third barrier confronting logistics managers. Infrastructure standardization refers to differences in transportation and material-handling equipment, warehouse and port facilities, and communication systems. While there have been recent efforts to improve standardization with respect to containerization, there are still major differences in global transportation equipment such as vehicle dimensions, capacity, weight, and rail gauge. It is not even necessary to go beyond United States boundaries to find differences in permissible transportation equipment length and weight restrictions on a state-by-state basis.

When infrastructure is not standardized, it is necessary for products to be unloaded and reloaded into different vehicles or containers as they cross national

boundaries, resulting increased cost and time. Infrastructure problems are common within the United States when ocean carriers require ocean containers to be unloaded prior to domestic shipment.

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Trade restriction barriers can influence channel decisions, such as the rules that restrict the volume of imports or increase duties once a specified volume has been reached. There are, for example, trade agreements for all tuna imports from American Samoa into the United States. The agreement levies a 15 percent tariff when total annual imports exceed a specified level. When the specified level is reached, tuna importers build inventories in bonded warehouses for shipment release following the beginning of the next year. The use of bonded warehouses on the United States mainland means that the tariffs are not assessed until the product is shipped to local warehouses. While the tactic of using bonded warehouses reduces tariff expense, it increases logistics complexity and cost, since it requires inventory buildup and temporary warehousing. Not only is this a problem when individual enterprises use this tactic, but it is further compounded since competitors also vie to get their product imported under the same import restrictions while minimizing their duty and storage expense. This example illustrates how trade agreements that limit quantities or require special conditions increase international logistics complexity.

The Global Challenge

Firms desiring to expand globally need to assess the balance of forces that encourage such activity and the barriers they must overcome. Increasing international trade requires logistics managers to develop both a global awareness and a global perspective. Managers must be aware of the aforementioned logistics barriers, consider alternative solutions, and have the insight to apply them in nontraditional environments.

While logistics principles are the same domestically and globally, operating environments are more complex and costly. Cost and complexity are represented by the four D's-distance, documents, diversity in culture, and demands of customers. Distances are longer. Documentation is more extensive. Customers demand variation in products and services to satisfy cultural differences, within both countries and regions. Developing strategies and tactics to respond to the "four D" environment is the global challenge for logistics management.

Global logistics development requires creation of an international operating philosophy and vision. The vision must result in operating strategies, performance expectations, measurement, and decision alternatives. The following section contrasts two perspectives of international trade.

Global Trade Perspectives

The continuum of global trade perspectives ranges from an importing and exporting orientation to the concept of a stateless enterprise. While there are certainly

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intermediate positions, the different perspectives are highlighted by reviewing extremes. The following section compares conceptual and managerial implications of enterprise focus, process orientation, and structural relationships associated with each extreme perspective. The section concludes with an examination of the logistical differences between national and stateless enterprise perspectives.

4.2.3 Importing and Exporting: A National Perspective

The national perspective considers all international activity as importing and exporting. The enterprise's organization within each country is focused on internal operations and views each transaction from a national perspective of what it will do for the local operation. Typically, when firms are guided by this philosophy, their operation in each country is managed as an autonomous unit with performance measurement focused on its own profit and loss statement, including self-generation of assets.

A national perspective influences logistical decisions in three ways. First, sourcing and resource choices are based on artificial constraints. The constraints may be in the form of use restrictions or price surcharges. A use restriction is a limitation, usually government-imposed, that restricts import sales or use. For example, the enterprise may require that internal divisions be used for material sources even though prices or quality are not competitive. Price surcharges are artificial price increases on foreign-sourced products imposed by governments or home country operations to maintain the viability of local suppliers. In combination, use restrictions and pricing surcharges limit management's ability to select what otherwise would be the preferred supplier.

Second, confronting logistics with a nation-by-nation perspective increases planning complexity. A fundamental logistics objective is smooth product flow in a manner that facilitates efficient capacity utilization. Barriers resulting from government intervention make it difficult to achieve this objective. The tuna example, cited earlier, demonstrates how government policies cause artificial diversions of product flow.

Third, a national perspective attempts to extend domestic logistics systems and operating practices around the globe. While this philosophy simplifies matters at a policy level, it increases operational complexity since exceptions are typically numerous. Local managers must handle such exceptions while remaining within corporate policies and procedures. As a result, local logistics management must accommodate cultural, language, employment, and political environments without full support and understanding of corporate headquarters.

The national perspective both decreases and increases decision complexity for logistics managers. Decision complexity is decreased since the enterprise limits alternatives under consideration by eliminating global sourcing and dictating

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suppliers. On the other hand, logistics decision complexity is increased by the addition of non economic constraints such as political policy or subsidiary ownership that can change overnight. This combination often results in less than competitive product quality and price.

Perhaps the most visible example of a national perspective, both politically and socially, is found in Japan's distribution system. Japan has more than 1.5 million small (less than 3,200 square feet of floor space) neighborhood shops that account for more than 50 percent of retail sales-compared with 3 percent in the United States and 5 percent in Europe. Since World War II, one of Japan's top economic priorities has been to maintain this network of small shops for cultural reasons. A vast, multi tiered network of wholesalers evolved to supply the shops, often providing daily delivery on cash-and-carry service. These wholesalers are linked to manufacturers and/or to Japan's huge trading companies via another tier of large distributors. As a result, 20 percent of all Japanese workers are employed in distribution.

Protection of this distribution system takes many forms. In particular, distribution legislation, such as the 1974 Large Retail Stores Law, regulates the opening of new stores larger than 5,400 square feet. The approval involves an extended negotiation that often exceeds eight or more years with local officials and retailers. As one might expect, the law has severely limited the entry of western-style retailing in Japan. Socio-cultural forces also contribute to distribution inefficiencies. Traditional Japanese society involves a rigid code of interpersonal obligations that serve to maintain social harmony, group welfare, and hierarchical relationships. These societal characteristics promote close ties between wholesalers, as well as between wholesalers and retailers. Foreign manufacturers, especially American, find it difficult to penetrate these complex social-business linkages. American manufacturers have attempted several strategies to improve access to Japanese markets. One approach involved building brand awareness in the highly brand conscious Japanese consumer and relying on a "pull" method of acquiring distribution. While this strategy has worked for some highly visible global brands, manufacturers with weaker brand identities are forced to rely on the huge Japanese trading companies for market access. In recent years, most, if not all, firms emphasized quality as the key determinant of consumer product offerings. Another strategy, utilized by large firms such as Toys "R" US, attempted to establish direct distribution and bypass the numerous tiers of wholesalers between typical United States manufacturers and Japanese consumers. Except for firms with the ability to utilize direct distribution, most foreign companies have found little or limited success penetrating the Japanese distribution system.

Today, however, the traditional Japanese distribution system is beginning to break down because of a variety of internal and external economic pressures. First, the consumer has become increasingly price-conscious as a result of a three year recession. The drop in value of the dollar against the yen, to record post World War II levels, has lowered the effective price of imports. In fact, a recent poll in Japan discovered that price, not quality, now determines most purchases. Second, brand

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loyalty is eroding as giant retailers offer more low-priced private house brands of diverse products such as televisions and soft drinks. Third, innovative small firms are avoiding traditional supply and distribution channels and are selling goods at cut-rate prices. Finally, foreign retailers such as Toys "R" US have brought mass merchandising practices to Japan and have benefited from relaxations in the Large Store Retail Law that increase store hours and the number of allowable business days per week. These changes in the structure of Japanese distribution suggest that over time, global economic conditions have the potential to drastically alter a traditional, national trading perspective.

4.2.4 The Stateless Enterprise

The stateless enterprise perspective, which is also known as "companyism," contrasts sharply to operations under a national perspective. The stateless concept was popularized in a Business Week article describing enterprises that are effectively making decisions with little regard to national boundaries. These enterprises have the capacity to juggle multiple identities and loyalties and resemble insiders in whatever area they operate. For example, even though the stateless enterprise may have its historical foundations in Germany, Japan, or the United States, a high percentage of its sales, ownership, and assets are outside the country of origin. The stateless enterprise is also likely to have senior management and boards of directors representing a broad range of nationalities and global experiences. Examples of firms that fit these specifications are ABB (Switzerland), Dow Chemical (United States), ICI (Britain), Hoechst (Germany), Nestle (Switzerland), and Philips (Netherlands).

Examples of global firms operating as stateless enterprises can be seen in China. Although China is estimated to be the world's third largest economy, it very much remains a third-world country in many respects-particularly concerning logistics and channel infrastructure. China has poor communications, no intermodal systems or boxcar availability or container tracer capability, no cargo airlines, and virtually non-existent roads outside major cities. Firms preparing to invest in Vietnam face similar conditions. For these reasons, several of the largest United States firms currently operating in China are relying heavily on local managers to run logistics operations. Both AT&T and Procter and Gamble believe that their Chinese operations cannot be run by managers from the United States because of such underdeveloped business systems, the rapid rate of change, and exploding trade volume. Questions of supply chain distribution for Procter and Gamble are handled by its general manager in Guangzhou. In fact, the general manager has almost complete freedom regarding product-line sourcing, regardless of the country of origin. Similarly, AT&T's logistics person in Shanghai determines operating policy for the company's network systems division. This division has responsibility for providing the foundation for a modern phone system in China. A recent informal survey of logistics managers indicates that business in China has never been better but that the country is one of the most challenging experiences in business today. Given these conditions, the logistics of operating in China and other developing regions of the world are indeed quite challenging.

What are the logistics implications of a stateless enterprise? The first implication is that managers are able to identify and evaluate alternative strategies and have the authority for implementation. In the case of logistics management, this requires investments of time and effort to identify and evaluate alternatives for materials, logistics service suppliers, manufacturing and warehousing locations, and customer alliances. These requirements particularly affect the stateless enterprise because of the geographic scope and cost of its operations, as well as the attendant risk involved in decisions of such magnitude and complexity.

A second logistics implication is the need to develop and implement flexible systems and procedures. While basic logistic principles suggest that substantial scale economies are preferable to support global development and implementation, the stateless enterprise is sensitive to local market requirements. For example, business elements other than a country's language must be adapted in order to support the concept of global localization or customization. The system must also adapt to differences in documentation, packaging, pricing, and operations. To provide this flexibility, firms are adopting a data warehousing concept. The data warehouse is a database general enough to accommodate the information needs of the global enterprise with a flexible user interface that can be customized to individual market needs and procedural differences. Each market receives its own door to the warehouse so that each country can meet its specific needs.

The experience of Dow Chemical illustrates typical problems associated with poorly integrated global systems. In the past, Dow systems and procedures differed by business unit and global location. The lack of integration increased operating complexity while it decreased capability to respond to customers on a global basis. To resolve this problem, Dow management has initiated a long-range plan to implement an integrated system capable of providing customers with whatever information they may want about a product they have ordered or consider ordering, regardless of their global location. This localized integration requires sensitivity to local market needs while providing information structures to support a common knowledge base.

Global Operating Levels

The previous discussion contrasted two extreme perspectives of globalization. This section traces the levels of enterprise evolution from domestic logistics operations to becoming a global competitor. The duration of each level is a reflection of managerial philosophy rather than elapsed time. The five levels are arm's-length relationship, internal export, internal operations, insider business, and denationalized operations.

4.2.5 The Interlinked Global Economy

As discussed throughout this unit, global economies are increasingly interlinked by material suppliers, logistical systems, manufacturing capacity, and markets. It is

natural that this inter-connectedness takes the form of regional alliances that leverage geographic proximity and scale economies. The major triad regions developing are North America, Europe, and the Pacific Rim. It is likely that Eastern Europe will join with the Western European countries and that South America will ultimately link up with North America. Although there is considerable speculation, the ultimate resolution involving the former Soviet Union states and African countries is not clear. As regional alliances emerge, they evolve through four stages of integration. This section introduces these stages and reviews each region's development status.

Stages of Regional Integration

The four stages of economic integration are free trade agreement, customs union, common market, and economic union. The first stage, a free trade agreement, eliminates tariffs on trade between countries in a region. Specifically, a free trade agreement is defined when:

Each participant in the free-trade area expects to gain by specializing in the production of goods and services in which it possesses comparative advantages and by importing from other countries in the group products and services in which it faces comparative disadvantages. Thus, trade should be created among member countries, giving them less expensive access to more goods.

A free trade agreement may either stimulate or reduce interregional trade. Such agreements can also reduce access of the firms to more efficient producers or markets outside their region.

The second stage, a customs union, eliminates tariffs between member countries and establishes a common external tariff structure toward other regions and nonmember countries. Under this and the remaining two stages, member countries are required to give some control over economic policies to the group. The advantage of a customs union is that none of the member nations in the union can position themselves to gain a tariff advantage at the expense of other countries.

The third integration stage, a common market, is characterized by the same tariff policy as the customs union. In addition, a common market allows factors of production such as labour and capital, as well as goods and people, to move freely between member countries as dictated by market conditions.

The economic union is the fourth and most advanced stage of development because it implies harmonization of economic policies beyond a common market. Economic union standardizes monetary and fiscal policy among member countries. While not absolutely required, an economic union likely includes common currency and harmonized tax structures. The economic union implies that all goods and production factors can move freely according to market conditions and that no major fluctuations in monetary exchange and interest rates will occur.

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4.2.6 Importance of Global Logistics

The operating challenges faced by global logistics systems vary significantly within operating regions. The North American logistics vision is one of open geography with extensive demand for land-based transportation and relatively limited need for cross-border documentation. The European logistician, on the other hand, views operations from a perspective characterized by relatively compact geography involving numerous political, cultural, regulatory, and language barriers. The Pacific Rim logistician has an island perspective that requires extensive water or air shipment to transcend vast distances. These different perspectives require logistics managers who operate globally to develop a wide variety of capabilities and expertise.

In the past, an enterprise could survive with a unique North American, European, or Pacific Rim logistics perspective. Specifically, an enterprise could achieve substantial success through regional logistics capability. While this is still true for some firms, those that desire to grow and prosper are finding a regional business strategy is no longer adequate. In order to allow manufacturing and marketing scale economies to support market growth, enterprises are developing global logistics expertise. The extended global capabilities must include international transportation, cultural diversity, multi-language capability, and extended supply chain operations.

Global operations increase logistics cost and complexity. In regards to cost, estimated 1991 logistics expense for industrialized nations exceeds $2 trillion, or 11.7% of combined gross domestic product (GDP).

In terms of complexity, global operations increase uncertainty and decrease capability to control. Uncertainty results from greater distances, longer lead times, and decreased market knowledge. Control problems result from the extensive use of intermediaries coupled with government intervention in such areas as customs requirements and trade restrictions.

These unique challenges complicate development of an efficient and effective global logistics system. However, in today's economy, globalization cannot be avoided. As such, logistics must resolve these concerns and complications. Fortunately, there are forces that both motivate and facilitate globalization and necessitate borderless logistics operations. This first section examines the forces motivating globalization, identifies major barrier to borderless operations, and summaries the resulting logistics challenges.

4.3 EXPORT LOGISTICS—SPECIAL ASPECTS OF EXIM LOGISTICS

Exporting is the most traditional and safe way of entering into a foreign market. It involves marketing of goods produced in the domestic country in another country. It does not involve any manufacturing in the foreign country. For example, Hero Cycles exports its cycles from India to many countries and so do a number of Chinese firms

to different parts of the world. Exporting is considered least risky, as all the goods are manufactured in the home country under the direct control of the exporter and usually, the financial risk is also covered by way of payments through Letters of Credit (LOC). Expenses and risks of operations abroad are almost negligible. However, there is hardly any control over marketing. Mostly, the buyer abroad or his agent dictates terms to the exporter. At times, the exporter may have to face the possibility of being without orders for longer periods if the buyer/his agent do not place an order. For example, an exporter from India or China who supplies handicrafts to Pier 1 Imports in the US is always at the mercy of buyers at Pier 1 Imports or their authorized buying agents. This means there can be two types of exporters: Active and Passive. Active exporters are the ones who work hard on marketing their products to buyers abroad through various channels. In fact, they spend considerable time and money in their marketing efforts. On the other hand, a passive exporter is only a reactor for he waits for the opportunity of receiving an export order and works only upon producing that order and does not spend either time or money for marketing abroad.

In India, the Commerce Ministry through the Director General of Foreign Trade (DGFT) governs exports and imports. The ministry announces the Foreign Trade Policy (previously known as EXIM Policy) for certain periods from time to time. Currently, FTP 2004-2009 is in force and the policy serves as a basic guideline for all international trade transactions in India. Besides, there are certain other Acts that have a bearing on these transactions. Let us take a brief look at some of these:

This Act was the first to actually acknowledge foreign trade as the driving force of economic activity. The Act was constituted in keeping with the country's need to increase productivity and competitiveness and to achieve a strong export performance. This basic law governing foreign trade was implemented to serve as an instrument to create an environment to provide a strong impetus to exports, facilitate imports and render export activity more profitable.

Accordingly, this Act was defined as follows:

An Act to provide for the development and regulation of foreign trade by facilitating imports into, and augmenting exports from India, and for matters connected therewith or incidental thereto.

As can be seen, the Act has the following three main objectives:

1. Development and regulation of foreign trade
2. Facilitation of imports and augmentation of exports
3. Provide for related and incidental matters

Every exporter of goods must:

(a) Furnish to the Reserve Bank or to such other authority a declaration in such form and in such manner as may be specified, containing true and correct material particulars, including the amount representing the full export value or, if the full export value of the goods is not ascertainable at the time of export, the value which the exporter, having regard to the

prevailing market conditions, expects to receive on the sale of the goods in a market outside India.

(b) Furnish to the Reserve Bank such other information as may be required by the Reserve Bank for the purpose of ensuring the realization of the export proceeds by such exporter.

The Reserve Bank may, for the purpose of ensuring that the full export value of the goods or such reduced value of the goods as the Reserve Bank determines, having regard to the prevailing market-conditions, is received without any delay, direct any exporter to comply with such requirements as it deems fit.

Every exporter of services shall furnish to the Reserve Bank or to such other authorities a declaration in such form and in such manner as may be specified, containing the true and correct material, particularly in relation to payment for such services.

Where any amount of foreign exchange is due or has accrued to any person resident in India, such person shall take all reasonable steps to realize and repatriate to India such foreign exchange within such period and in such manner, as may be specified by the Reserve Bank.

4.3.1 Export Transport Costs

Ocean and surface transport costs are excessive and create a major barrier to foreign market. Transport infrastructure, such as ports, ICDs, CFSs, etc., plays an essential role in facilitation international trade, constituting as they do the main interface between ocean transport and surface transport. The level of infrastructure development and the quality of services are major factors in the cost of transportation.

1. The major component of export transport logistics cost are:
2. Labour charges for handling, stowing etc
3. Road transport charges
4. ICD charges
5. CFS charges
6. Port Terminal Handling charges
7. Clearing charges
8. Consolidation charges
9. Liner freight

An export transport logistics cost estimate does not include the following:

1. On carriage charges payable at destinations port
2. Transport insurance
3. Duties and taxes
4. Storage and demurrage charges.

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Containerized Shipment

Basically, shipments are classified into two broad categories, bulk shipment and small shipment. Bulk shipment is further divided into two, liquid bulk, e.g. POL, chemicals, edible oil etc. and dry bulk e.g. ore, food grain, fertilizer etc. Small shipment is further divided into two, containerized shipment and non- containerized shipment (break-bulk or general cargo).

To cater to the movement of these shipments, shipping companies provide two types of services, tramp shipping and liner shipping. Tramp shipping provides services on demand and carries bulk shipment (liquid and dry bulk), between nominated ports. Transportation charges, i.e. freight are based on supply and demand situation for the ship in the market.

In contrast, liner shipping provides schedule service to advertised ports, on different selected trade routes in the world. Liner shipping carries containerized shipment and non-containerized shipment (break bulk or general cargo). Liner shipping carries small shipment, received from N-number of exporter in various ports and deliver to N-number of importer located in various ports. Liner shipping receives the shipment, irrespective of characteristics, volume, weight and quantity of cargo. Freight rates are fixed and made known to traders in advance; this enables them to quote prices on CIF basis or as per Incoterm 2000. Containerized shipment is further divided into less than container load (LCL) and full container load (FCL).

Movement of Containerized Shipment

Generally, an exporter based in hinterland, irrespective of distance from the servicing gateway port, prefers to move cargo by road to CFS (a transit facility where he stuffs cargo in containers and containers are transported to port for loading on board the ship).Some preferred to move cargo in container under 'factory stuffed' facility by road. In both LCL/FCL and factory stuffed, cargo moves through the CFS (Container Freight Station), a transit facility, before entering in port premises for loading on board the ship.

1. Following are the steps involved in the movement of shipment by road and stuffing of shipment in container is done at CFS, port:
   - (i) Transfer of cargo into truck
   - (ii) Storage of cargo in truck
   - (iii) Road (truck) journey
   - (iv) Breaking out of cargo from truck
   - (v) Transfer of cargo from truck to storage point/shed/yard in CFS
   - (vi) Unpacking for customs examination
   - (vii) Repacking for customs examination
   - (viii) Consolidation of cargo according to destination

(ix) Stuffing of cargo in the container

(x) Locking and sealing of container

(xi) Loading of container on truck

(xii) Transportation of loaded container to container yard in port

(xiii) Unloading of container in container yard in port

(xiv) Stacking of container tin container yard in port

(xv) Loading of container on truck to move container alongside ship

(xvi) Truck journey from container yard to alongside ship, i.e., Quay

(xvii) Loading of container from truck to cellular hold of ship

(xviii) Sea voyage

2. Following are the steps involved in the movement of factory stuffed FCL shipment container:

   (i) Central excise clearance

   (ii) Transfer of cargo into container in presence of Central Excise Inspector

   (iii) Stowage of cargo in container

   (iv) Central excise sealing

   (v) Loading of container on truck

   (vi) Road journey

   (vii) Unloading of container from truck and storage/stacking of container in buffer yard in CFS

   (viii) Customs clearance/sealing of container

   (ix) Loading of container on truck

   (x) Transportation of loaded container to container yard in port

   (xi) Unloading of container in Container Yard in Port

   (xii) Stacking of container in Container Yard in Port

   (xiii) Loading of container on truck to move container alongside ship

   (xiv) Truck journey from Container Yard to alongside ship i.e., Quay

   (xv) Loading of container from truck to cellular hold of ship

   (xvi) Sea voyage

Factory stuffing serves certain advantages over CFS stuffing. It reduces multiple handlings of packages/cases, etc., thus reducing labour cost and material handling equipment hiring cost. Further, it also reduces risk related to loss or damage due to theft, mishandling.

3. Following are the steps involved in the movement of shipment by road and rail and stuffing done at ICD:

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(i) Transfer of cargo into truck
(ii) Stowage of cargo in truck
(iii) Road journey
(iv) Breaking out of cargo from truck
(v) Transfer of cargo from truck to shed/place of examination in ICD
(vi) Unpacking for customs examination
(vii) Repacking after Customs examination
(viii) Consolidation (in case of LCL)
(ix) Stuffing of cargo in container
(x) Locking and sealing of container
(xi) Loading of container on flatbed wagon
(xii) Rail journey
(xiii) Unloading of container from flat bed wagon and storage of container in container yard in port.
(xiv) Loading of container on truck to move container alongside ship.
(xv) Truck journey from container yard to quay.
(xvi) Loading of container from truck to cellular hold of ship
(xvii) Sea voyage

The movement of containerized shipment through ICD is more cost effective. Containers are moved by rail from ICD to gateway port, serves the advantages like no traffic congestion, i.e, quick transit, rail freight cheaper than road transport, ICD containers exempted from octroi formalities etc.

Road Transport

In India, 'Motor Vehicle Act 1988' deals with transportation of goods by road: registration of vehicle, safety, economic life of vehicle, etc. This act prohibits overloading of cargo.

Road transportation charges are more than rail transportation charges. Cost of fuel accounts for more than 50 percent of the running cost of truck, heavy labour charges engaged for unloading, road traffic congestion because of bad road conditions, toll collection at various points and detention at toll points, i.e., loss of time and money contributes to higher transportation charges. However, road transport continues to be the preferred choice because unlike the Railways, road transport provides door-to-door service.

Road freight (without container) : Rate / Tonne
Road freight (with container) : Rate / TEU

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Rail Transport

Rail transport is a more convenient mode of transport for cargo movement from the hinterland to port. It is not only cheap, but also eliminates traffic congestion and detention at Octroi. Railways, initiated the process of containerized cargo transportation way back in 1966.

To promote and manage effectively the growth of containerized cargo traffic in India, the Container Corporation of India (CONCOR), a sister concern of Indian Railways, was incorporated in 1988. Apart from transportation of containers by rail, CONCOR also operates a huge network of ICDs and CFSs all over India. By injecting the competition in container rail transport segment, the monopoly status of CONCOR in container rail transport came to a standstill. It is envisaged that competition in container rail transport will reduce the cost of transport.

Rail Freight Rate

For Empty container	Rate / TEU
For Loaded container	Rate / TEU

4.3.3 Customs Clearing Charges

Custom House Agent's (CHA) main job responsibility is to study the laws governing the export and import and interpreting the levies payable and incentives receivable by clients. They also assist their clients in preparation of document according to expectation of customs authorities.

These Custom House Agents are known by different names in different countries such as Customs Clearing Agent, Freight Forwarding Agent, Customs Broker and Shipping and Forwarding Agent. But one aspect of their activities, which is common to all of them, whatever name they use, is that they all sell their services only.

On behalf of the shipper, CHA does all procedural and documentation formalities, involved in the Customs and port clearance. Such as:

1. Processing of documents, shipping bills etc.
2. Carting of goods/cargo to CFS
3. Arranging of physical examination of goods
4. Collection of measurement certificate
5. Handover goods/cargo to carrier i.e., shipping line
6. Personally attending stuffing of cargo in container
7. Collection of Bill of Lading from shipping line
8. Collection of documents from Customs such as duplicate copy of shipping bill, attested copy of Invoice & Packing List.

Today, CHA or Freight Forwarding Agent does except everything except manufacturing the goods and they are a real third party logistics providers.

Following are the charges payable to CHA for the service rendered:

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1. Agency Expenses

There is no fixed yardstick for charging agency expenses. Some charge 0.75% of invoice amount, if invoice amount is more than Rs. 10 Lakh. And some charges 1% of invoice amount, if invoice amount is less than Rs. 10 Lakh. Some charge fixed rate per TEU for FCL shipment and some fixed minimum charges for LCL shipment.

2. Documentation Charges. *Rate / Shipping Bill*

Charges varies according to type of Shipping Bill, i.e., free drawback, DEEC, DEPB, etc

3. "N" Form charges	Rate / Invoice
4. Measurement charges	Rate / Package or Carton
5. Examination Charges	Rate/ Shipping bill
6. GSP Charges & expenses	Rate / Certificate
7. Postage, courier charges	Rate / DOC set
8. Bill of Lading charges	Rate / Bill of Lading
9. Consolidation charges	Fixed Amount

Inland Container Depot (ICD) and Container Freight Station (CFS)

Both ICD and CFS is an infrastructure facility, owned and operated by public or private authority, especially designed for offering services of handling, storage and movement of containerized cargo and cargo under Customs supervision.

Services Offered by ICD/CFS

ICD and CFS handle only containerized shipment, thus special kind of facilities are provided like:

1. Sheds for temporary storage of cargo
2. Container yard for temporary storage of container
3. Customs clearance facility
4. Cargo handling equipment
5. Container handling equipment
6. Manpower for stuffing the cargo into container and destuffing the cargo from container
7. Road/rail connectivity to and from serving gateway port.
8. Bonded warehousing facility
9. Maintenance and repair of container unit
10. Packaging, palletisation fumigation

Advantage

Basically, shipping company, CHA and individual exporter and importer are the users of these infrastructure facilities. Every user has some unique advantages:

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1. Port authority receives ready-to-load condition container, thus port authority relieved from traditional job of preparing tally sheets etc and enable port to provide faster turnaround time to shipping lines ultimately port's productivity and profitability increases.
2. Almost all ICDs linked to port by rail thus quick transit at lower transport cost, no traffic congestion, no detention at octroi post.
3. ICD / CFS is a logistic hub for LCL cargo thus consolidation became more easy.
4. ICD / CFS assist exporter / importer is reducing inventory cost.
5. ICD / CFS are owned and operated by public and private authorities thus every user gets quality service at competitive rates.

ICD / CFS charges

Following are the charges payable to ICD / CFS authorities for the services rendered:

Ground rent charges

- Loaded container — Rate / TEU / Day
- Empty container — Rate / TEU / Day

Cargo Storage Charges — *Rate / Sq. Mtr*

(a) For LCL — Rate / TEU

Unloading of cargo from truck, stacking in storage area, providing labour and CHE for taking out packages for examination, consolidating consignment, shifting of container to stuffing point, stuffing of cargo in the container, locking and sealing.

(b) For FCL — Rate / TEU

Providing labour, equipment for taking out required number of packages from container, unpacking for Customs examination, repacking, stuffing the packages in container, locking and sealing.

Lift on/Lift off charges

- Loaded Container — Rate / TEU
- Empty Container — Rate / TEU

Transportation of container from ICD/CFS to JN Port

- Loaded Container — Rate / TEU
- Empty Container — Rate / TEU

4.3.4 Terminal Handling Charges

Once the cargo is stuffed in container to its fullest capacity and after completion of all due documentation formality, sealed containers are moved from CFS/ICD to gateway servicing port for further loading on containership.

Port authority provides facility to receive container, stacking of container in yard, transportation of container from yard to quay side and loading on board the ship. For providing these facility, port authority recover some charges from shipping line or agent of vessel or cargo agent, commonly known as Terminal Handling Charges (THCs).

Normally, THCs are quoted per TEU separately for loaded and empty container. Rate varies per TEU for the type of container used like reefer container, flatbed container, hazardous cargo carrying container.

Following are the THCs for normal container:

(i)	From truck to Container Yard	Rate / TEU
(ii)	From rail flat wagon to Container Yard	Rate / TEU
(iii)	From CFS to Container Yard	Rate / TEU
(iv)	From Container Yard to Ship	Rate / TEU

Normal practice is that shipping line or vessel agent or cargo agent pays THC to port authority and, subsequently, recover from the concerned party i.e., exporter or importer.

4.3.5 Ocean Freight

Liner conference is an association of liner shipping company. Liner conference appoints a Rate Committee to prepare liner freight tariff, application of which will be binding to all the member shipping companies associated with the conference.

LCL Shipment

For heavy cargo	Rate/TONNE
For voluminous cargo	Rate/CBM

FCL Shipment RATE/TEU

Ocean freight are fixed per TONNE or per CBM or per TEU basis, commonly known as Basic Ocean Freight. During a voyage, shipping line incurs extra expenditure or losses due to impact from external forces, which are beyond control of shipping line. Thus, in order to recover such expenditure or losses, shipping lines imposes surcharges on and above Basic Ocean Freight. These surcharges are:

(i) Currency Adjustment Factor (CAF) + or – x% of BOF

Whenever a shipping line incurs certain losses or gain certain profit due to fluctuation in value of currency, they recover the losses by adding some per cent of BOF to BOF or pass on the share of profit by deducting some per cent of BOF from the BOF.

(ii) Bunker Adjustment Factor (BAF) + y% of BOF

The cost of fuel is incorporated in the BOF. On certain occasion, shipping lines incur additional expenses on purchase of fuel due to sudden escalation in international fuel prices. These additional expenses are loss to shipping lines. To recover additional cost on fuel, shipping lines impose surcharge called BAF by adding some per cent of BOF to BOF.

(iii) Port Congestion Surcharge Fixed Amount/TEU

Port workers' strike, inadequate harbour and terminal infrastructure facility, sudden change in demand and supply leads to situation like pre-berthing detention, slower turnaround time, and slower movement of container from/to hinterland. Such situations are beyond control of shipping lines. This not only hampers the further schedule, but also inflates the standing cost of shipping lines. Disturbance of schedule and additional standing cost is loss to shipping lines. To recover this loss, shipping lines impose surcharge by adding some percent of BOF or fixed amount per TEU to BOF.

(iv) War Risk Premium

Term of sale	Freight paid by	Freight charged to	Risk transfer point	Ownership in transit	Claims
FOB Origin Freight Collect	Buyer	Buyer	Port of shipment	Buyer	Buyer
FOB Origin Freight Prepaid	Seller	Seller	Port of shipment	Buyer	Buyer
FOB Origin Freight Prepaid & Charged back	Seller	Buyer by adding amount to invoice	Port of shipment	Buyer	Buyer
FOB Destination Freight Collect	Buyer	Buyer	Port of Destination	Seller	Seller
FOB Destination Freight Prepaid	Seller	Seller	Port of Destination	Seller	Seller
FOB Destination Freight Collect & Allowed	Buyer	Seller by deducting amount from invoice	Port of Destination	Seller	Seller

Fixed Amount/TEU

Whenever a ship passes through war-prone zone, insurance underwriter imposes additional premium to shipping lines. Normal insurance premium paid by shipping line is incorporated in freight. This additional premium is additional expenditure. To recover additional expenditure, shipping lines impose surcharge by adding some percent of BOF or fixed amount per TEU to BOF.

Incoterm

FOB (free on board) means that the exporter fulfils his obligation to deliver when the goods have passed over the ship's rail at the named port of shipment. This means

that exporter bears entire export logistics costs till the goods shipped on board the ship in port of shipment and completes all formalities of export. And importer has to bear all costs and risk of loss or damage to the goods from that point onwards. Importer pays for freight, insurance and import duty etc.

Sum of inland transport cost (road + rail) + Transit facility charges (CFS / ICD) + CHA charges + Consolidation charges + THC + Cost price of goods; represent FOB cost to the buyer.

Some common terms of sale now a day practiced in international trade are FOB Origin, FOB Destination etc. In FOB Origin a buyer pays freight and risk is transferred from seller to buyer in the port of shipment. Whereas in FOB Destination, seller pays freight and risk is transferred from seller to buyer in the port of destination. The sale term like freight prepaid, freight collect when clubbed with FOB origin or destination, it gives a different ground for negotiation. The table above gives details of each term.

INCOTERM 2000 provides interpretation of obligations and responsibilities to be discharged by exporter and importer in international trade. There are 13 terms including FOB as explained above. All these terms have unique feature. These terms can also be used as negotiating and cost-cutting tool.

4.3.6 Registration of Exporters

Be it an individual, or a partnership firm, an HUF, a private limited company or a limited company, which is planning to enter either imports or exports, has to follow guidelines provided by the Foreign Trade (Development & Regulation) Act, 1992.

The Act provides for the development and regulation of foreign trade by facilitating imports into, and augmenting exports from, India. The Act has empowered the Central Government to appoint the Director General of Foreign Trade (DGFT) to advise the government in the formulation of the export and import policy and to carry out that policy to facilitate imports and augment exports.

The Act requires a person or organization to register itself with the DGFT by obtaining IEC, Importer-Exporter Code. No one is authorized to export from or import into India, anything unless one has this IEC Number, except in certain specific cases. Before January 1997, each exporter was required to obtain the CNX Number from RBI. However, now the only number required is the IEC.

The handbook of procedures has laid down the various provisions related to IEC.

IEC Number

As per Para 2.12 of the Foreign Trade Policy 2005 – "No export or import shall be made by any person without an Importer-Exporter Code (IEC) number unless specifically exempted. An Importer-Exporter Code (IEC) number shall be granted on application by the competent authority in accordance with the procedure specified in the Handbook (Vol.1)".

The first step for becoming eligible for export/import, therefore, is to get oneself registered as an authorised holder of IEC Number.

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Application for IEC Number

To obtain this number, an application in the prescribed format has to be made to the prescribed authority, attaching the required documents and making payment of the prescribed fee.

Two copies of the application must be submitted, unless otherwise mentioned. Each individual page of the application has to be signed by the applicant. Application must be accompanied by documents as per details given below:

1. Bank Receipt (in duplicate)/Demand Draft/EFT details evidencing payment of application fee in terms of Appendix 21B.
2. Certificate from the banker of the applicant firm in the format given in Appendix 18A.
3. Self-certified copy of Permanent Account Number (PAN) issued by Income Tax Authorities.
4. Self-certified copy of RBI approval in cases where non-resident interest/holding in the firm/company exists with repatriation benefits.
5. Two copies of passport size photographs of the applicant duly attested by the banker of the applicant.

Points need to be taken care of while applying for IEC Number

- The business organisation needs to be established first. It could be a sole proprietorship, a partnership, an HUF, a private limited or a public limited company.
- The business must have/open a current account with a commercial bank recognised by the RBI as an Authorised Dealer of foreign exchange.
- The business must obtain a PAN (Permanent Account Number) from the Income Tax Authorities.
- The business has to register itself with VAT and Excise Authorities as applicable.
- In case the business is a service provider, it has to register itself with requisite Service Tax authorities.
- The business has to register itself with the appropriate Export Promotion Council (EPC) and obtain the Registration-cum-Membership-Certificate (RCMC).
- The business then needs to fill in this form, attaching the required documents and the prescribed fee of ₹ 1000.00.
- A bank certificate needs to be obtained on the official letter head of the banker, indicating the complete name and address of the firm on the lines of HBP with name, designation with seal of the certifying authority.

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- A copy of PAN Number needs to be attested by the applicant, giving his name, designation and seal.
- Two photographs are required to be submitted, have to be duly attested by the applicant's banker.
- The business can start export/import transactions only after the allotment of the IEC.

4.4 PICKING AND PACKING

Let us discuss the concept of picking and packing in the following sub sections:

4.4.1 Picking

Picking processes have become an important part of the supply chain process. Right now, hundreds of thousands of pick-to-light modules are illuminating in distribution centers across the globe, directing order fulfillment operators to their next correct pick. For over three decades companies have been efficiently processing millions of orders each year with single or multiple light-directed applications in their supply chains. These original installations provided considerable increases in productivity, accuracy and customer service over manual order selection techniques. These legacy pick-to-light applications are also keeping their users from the current best practices and techniques.

There have been many breakthroughs in light-directed order fulfillment technologies, and today's highly sophisticated systems are quite differentiated from their legacy counterparts. These new solutions offer cable-free light module hardware for greater ease in system installation, expansion, re-slotting and maintenance. They also feature progressive software tools for better management of light-directed picking operations and improved visibility into the productivity of their pick process.

A significant key advance is the application of pick-to-display technologies to support simultaneous order picking strategies, as opposed to the sequential approach executed by pick-to-light systems.

Lightning Pick Technologies has helped numerous companies progress from sequential order picking methodologies to simultaneous pick processes by retrofitting pick-to-light systems with advanced pick-to-display solutions over the past quarter century. According to Bernie McCabe, a senior executive with Lightning Pick, "We have collected data from many of these projects to effectively compare the productivity and accuracy of the two approaches." McCabe outlines below the benefits of simultaneous order picking and provided case studies of two recent adopters of pick-to-display solutions over their previous pick-to-light systems and the benefits quickly achieved after making the transition.

Over the years 'pick-to-light' has become the generic industry term encompassing all light-directed order selection and sortation systems, differentiating

the overall approach from paper-based picking, RF picking, voice-directed picking and other methods. Even users of put-to-light for direct-to-consumer fulfillment or retail store replenishment operations (sometimes called pack-to-light) often recognize themselves as ultimately being part of the pick-to-light universe.

However, on an application level there is a vast difference between pick-to-light systems, popular in the first major wave of light-directed systems installed in the 1980s, and the pick-to-display solutions available today.

Pick-to-Light

Light-directed systems are frequently applied in zone picking formats to optimize broken case quantity order fulfillment. In zone picking orders travel along an assembly line, stopping at individual pick zones where operators 'build' the order by adding items to the order required within their zone. In pick-to-light, a light module is applied to the flow rack, shelving or other storage media at each product location. Each light module has an indicator light to attract the attention of the operator, and a button to be pushed when the picks at that location are complete. Some new light module designs feature indicator LEDs that are also the confirm button.

A bay display (sometimes called a bay controller or bay light) is also applied to each zone, often in a central location in the bay or area. In a pick-to-light environment, often the operator will scan a bar code license plate on the tote or shipping container to launch the pick sequence in their zone. This illuminates an LED at the first product location requiring picks. The operator reads the bay display, which communicates the quantity of those items required for the order. The operator picks that quantity at the illuminated location, and then pushes a confirmation button to complete the pick. After that pick is done, the next LED will illuminate and the bay display will show the quantity needed at that product location. The process repeats itself until all the picks for that zone are complete. The bay display will then direct the operator to send the container to the next zone, or provide other instructions.

Pick-to-Display

Pick-to-display takes these benefits to the next level by applying light modules featuring both LED indicators and quantity displays at each product location. When an operator scans a tote in their zone, all product locations requiring picks in the zone illuminate. The operator can see all product locations needed for the order, and each location light module tells them the quantity of items to pick.

Sequential vs. Simultaneous Picking

Pick-to-light is a sequential pick process. In pick-to-light systems the light modules direct the operator to one pick face at a time. This sequential process makes the operator physically pause in between each pick while waiting for the system to provide the next location. Once the next light is found, the operator must again pause to view the pick quantity presented separately on the bay display.

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Pick-to-display is a simultaneous pick process. In pick-to-display systems the operator sees all pick faces needed for the order at the same time. All location and quantity information for the first pick is right in front of her. She can also see that her next hand movement will be to the product location above her current task. After she places items in the tote and turns back to the flow rack, she already knows exactly where her next pick will be. The bay display at her upper right hand side also shares the order number for the job she is working on.

The simultaneous pick-to-display approach is significantly more productive than sequential pick-to-light systems because:

- Pick-to-display removes the pauses between each pick. Simultaneous picking eliminates time wasted waiting for pick directions from the system, allowing the operator to quickly move from one location to the next in one smooth process.
- Pick-to-display allows operators to execute one pick while anticipating the next. By seeing all illuminated pick faces at the same time, the operator mentally processes the next pick and prepares for the physical movement necessary for the task.
- All the information that the operator needs is right in front of them. This significantly increases pick accuracy and productivity by keeping the operator's attention in one place—at the actual product location. There's no need to step away from the pick location to get a better view of the bay display, because the indicator LED and quantity display are both located at the pick face.
- The bay display's capabilities are expanded. In pick-to-display systems the bay display can share other useful information besides pick quantities. The bay display can present order numbers, lot numbers or special picking instructions to ensure quality and performance.

Bernie McCabe detailed the following two Lightning Pick case studies which highlight the immediate and remarkable results two leading companies achieved when they replaced their existing pick-to-light applications with new light-directed technologies. Among other contributing factors, these users largely attribute the major productivity and accuracy increases to implementing new pick-to-display solutions.

Build-to-light

The newest development in these effective supply chain efficiency techniques and tools is build-to-light, used by build-to-order and assemble to order manufacturers. Build-to-light is the first light-directed error-proofing system and reduces errors within critical procedures such as parts picking, kitting, assembly and sequencing among others.

Lights mounted on workstations, bin shelving or other material storage media direct operators to the correct parts, quantities and sequences to execute their task

with greater accuracy than paper-based methods. McCabe was enthusiastic about this new product noting, "With increasing demand for customizable manufacturing throughout the supply chain, this new technology is likely to pioneer the next generation of cost-effective picking solutions."

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Sorting System

The sorting process including the requirement for a picking area, a storage area, replenishment of the picking area and a sorter. This method uses automatic material handling system consisting of multiple conveyors and a number of sorting devices. The items are placed on a conveyor in the storage area and the items are sorted for each particular order. The operator in the picking area collects the items that have been sorted for a customer order and processes that order. The efficiency is gained because the operator does not have to consume time collecting individual items.

Pick To Box

Pick to box is similar to the sorting solution as it uses the same elements; a picking area, a storage area, replenishment of the picking area and a sorter. The picking area is organized so that there are a number of picking zones connected by a conveyor system. The operator fills the box with the items on a customer order and the box moves to the picking zones until the customer order is complete and it is then ready for shipment to the customer. The efficiencies are gained because the operator does not have to consume time collecting individual items, but the cost of the initial set up of this solution could negate any cost benefits that the solution offers.

Choosing an order picking system depends on any number of requirements such as cost, complexity, number of customer orders, size and number of items, etc. Every company has a unique requirement and one order picking solution may suit one business and not another. Determining the requirements will ensure that the most efficient order picking solution is selected.

4.4.2 Packing

In addition to obtaining competitive freight rates and services, a shipper should ensure that the product will arrive in excellent condition. Of particular concern are products of a perishable nature, such as frozen and chilled foods as well as processed and packaged foods, drinks and juices. Important considerations include:

- Effective packaging and labeling
- Temperature, humidity and other environmental controls
- Well-maintained transportation equipment
- Proper loading, in-transit monitoring and unloading

Products must be protected from:

- Rough handling during loading and unloading
- Compression from the overhead weight of other product containers

Check Your Progress

1. What do you mean by export?
2. What do you mean by import?
3. What is GATT?
4. What are the four stages of economic integration?

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- Impact and vibration during land, ocean and air transportation
- Rolling, pitching, yawing, heaving, swaying and surging during ocean transportation
- Loss or gain of moisture due to the surrounding air
- Higher or lower than recommended temperatures
- Cross-contamination or odors from other products or residues

By using top-quality packing products, shippers can help ensure good arrival condition of their goods. Effective packaging, environmental controls and proper transportation equipment are essential. The complexity of packaging often calls for specialized responsibility within a company or the use of third party experts who can evaluate and design specific solutions for any given situation.

4.4.3 Product Packaging Checklist for Exporters

Before shipping, consider the following:

- The mode of shipping. Does it make sense to use air or ocean freight? Will you have to use road or rail for part of the journey? Look into the options and conduct a cost/benefit analysis.
- Whether to ship directly or indirectly. Will your goods be sent to the buyer directly? Is there a distributor or warehousing facility involved in the process? How will this affect your costs and ability to fill the order?
- Suitable packaging for the shipment. This will depend on the mode of shipping, the destination, the number of stops (and storage), the fragility of the goods and their sensitivity to environmental changes. It is critical to use suitable internal protection as well as a durable container. You may also want to consider shock and tilt indicators for packages that may be susceptible to overzealous handling.
- Application of appropriate markings to the package. While they do not guarantee damage-proof shipping, handling labels may potentially minimize the abuse your shipment experiences. Of course, handling labels are most effective when the people handling the packages can understand the language or symbols used.
- Including all relevant information on packages. This information includes port of destination, transit instructions, contact information of the consignee, package dimensions and weight, package number and invoice or order number.

4.4.4 Vessel Booking [Less-than Container Load (LCL) / Full Container Load (FCL)]

General Cargo Vessels

- These are for break bulk cargo and have cargo handling gear like derricks and jib cranes on board. A majority of these are 'tween-deck' vessels.

- They range from 2000 dwt to 150000 dwt, although the most common range is from 20000 dwt to 40000 dwt.
- The 'tween deck' vessel is a general cargo vessel engaged primarily on deep-see liner cargo services.
- This type of vessel has other decks below the main deck called 'tween deck' and all run the full length of the vessel.
- These vessels are suitable for general cargo, because the cargo space is divided into separate tiers and decks, which eliminates the risk of cargo damage by preventing too much weight being put on the cargo at the bottom.
- Currently, this type of vessel is being displaced in many trades by the container ship and combi carrier.
- Coasters are all purpose cargo carriers operating around our coast.
- LASH – Lighter abroad the ship. This type of vessel enables lighters to be conveyed from one port to another thus combining inland waterway with ocean transportation.
- Advantages of the service include through rates / bills of lading; no intermediate handling during transfer from the ship, low risk of cargo delay as barges are lowered into the water immediately on arrival at each port and the barges are likewise loaded on the LASH vessel; it reduces time spent in port or its environs to a minimum.

Full container load

A Full Container Load (FCL) is an ISO standard container that is loaded and unloaded under the risk and account of one shipper and only one consignee, in practice it means that the whole container is intended for one consignee. FCL container shipment attracts lower freight rates than an equivalent weight of cargo in bulk. Ideally FCL means the container is loaded to its allowable maximum weight or volume. In practice, the FCL in the ocean freight does not always mean packing a container to its full payload or full capacity.

Less than container load

Less than container load (LCL) is a shipment that is not large enough to fill a standard cargo container. The abbreviation LCL formerly applied to "Less than (railway) Car Load" for quantities of material from different shippers or for delivery to different destinations which might be carried in a single railway car for efficiency. LCL freight was often sorted and redistributed into different railway cars at intermediate railway terminals en-route to the final destination.

Less Than Carload or Less Than Container Load is a quantity of cargo less than that required for the application of a carload rate. A quantity of cargo less than that fills the visible or rated capacity of an inter-modal container. It can also be defined as "a consignment of cargo which is inefficient to fill a shipping container.

It is grouped with other consignments for the same destination in a container at a container freight station".

A system of transportation used in international trade, where various shippers pool their boxed goods in the same container.

4.5 CUSTOMS ACT, 1962

This Act provides for levy and collection of customs duty and prescribes procedures for import and export of goods. The main objective of this Act was to consolidate and amend the law relating to Customs in India.

Customs duty is an indirect tax that is paid at the time of importing or exporting any goods. The basic law for levy and collection of customs duty is the Customs Act, 1962 on imports and exports of goods from India.

The Act uses customs laws and levy of customs duty as means to achieve the following:

- Restricting imports for conserving foreign exchange.
- Protecting Indian industry from undue competition.
- Prohibiting import and export of goods for achieving policy objectives of the Government.
- Regulating exports.
- Coordinating legal provisions with other laws dealing with foreign exchange such as Foreign Trade (Development & Regulation) Act, Foreign Exchange Regulation Act,

  Conservation of Foreign Exchange and Prevention of Smuggling Act, etc.

In addition to the Customs Act, 1962, there is the Customs Tariff Act, 1975 that prescribes the rates of duties of Customs Duty on import and export of various goods.

This Act has two schedules:

Schedule 1: Schedule 1 classifies the goods for import and prescribes the rate of import duties.

Schedule 2: Schedule 2 classifies the goods for export and prescribes the rate of export duties.

The Act also provides for additional duties, preferential duties, anti-dumping duties, protective duties etc.

Various rules, regulations and notifications are used to govern the customs laws. A brief description of each is given below:

Rules

The Central Government has the power to make rules in order to carry out the purposes of the Act. Various rules have been framed under these rules such as Customs

Valuation Rules, 1988 for valuation of imported goods for calculating custom duty payable, Customs and Central Excise Duties Drawback Rule, 1971 for calculating rates of duties as drawbacks on exports, etc. However, if there is any conflict between the provisions of the Act and Rules, the provisions of the Act shall prevail.

Regulations

The Central Board of Excise and Customs (CBEC) have been empowered to make regulations to carry out the provisions of the Act. However, if there is any conflict between the provisions of the rules and regulations, the provisions of the rules shall prevail. Various regulations have been framed such as Customs House Agents Licensing Regulations, 1984 for regulating the functioning of custom house agents.

Notifications

The Central Government may also issue notifications in the Official Gazette for the purposes of the Act. The Central Government has several notifications under various sections such as partial or full exemption from duty, prohibiting certain imports and exports.

4.5.1 Custom Clearance

Customs Authorities and the Clearing agents play the key role in the import of goods. All goods imported into India have to pass through the procedure of Customs clearance as they cross Indian border. The goods are examined, appraised, assessed, evaluated and then allowed to be taken out of charge of the Customs for use by the importer. The entire process of customs clearance is complex and to carry out this procedure smoothly, the help of accredited customs clearing agents has to be taken.

The importers need to present a Bill of Entry on receipt of the advise of the arrival of the vessel. The B/E is noted in Import Department, with corresponding endorsement made against the consignment entry in the IGM along with the date. The B/E will then be presented in the Appraising Department with all the relevant documents like invoice, Bill of Lading, and Import license and catalogue literature.

4.5.2 Customs House Agent

The customs clearance of goods involves quite many procedure formalities. And in many cases the customs station is for away from the official place of the Importer/Exporter. Moreover prompt and quick clearance is necessary, only then goods can be cleared out of the customs area. Even work of Central Excise and Income tax can be carried out in a comparably leisurely manner, but customs clearance has to be really quick. Hence, to help and represent the Importer/Exporter for the clearance work under the Customs Act of 1962, there is provision for licensing Customs House Agents.

Prior to1962, such representatives were known by different names such as Macadam's, Dalals, Baggage Agents, and Clearance Agents etc. The Central Board of Excise and Customs (CBEC) have issued certain Regulations known as CHA Licensing Regulation 194 laying down the conditions and procedures to be followed. A person, who desires to become a CHA, should file an application in the prescribed form, when the commissioner of customs invites such applications. Initially a temporary Licence, valid for two years, is issued. To be eligible, a person should have experience in the line for at least one year should have assets to the extent of ₹ 1 lakh, and also execute a security bond for ₹ 25000 After passing a qualifying exam, within a period of two years, the temporary Licence can be made a regular Licence. The Licence is issued for five years, and can be renewed thereafter on payment of a fee of ₹ 3000 for a further period of three years.

As an individual or firm licensed to enter and clear goods through customers, a customs house broker is a person/firm employed by an importer to take over the responsibility of clearing the importers shipments through customs on a fee basis.

The CHA is bonded, and the CHA's bond provides the required coverage to carry on the responsibilities of the job. He may also act an F.F. once the shipment is cleared.

CHA must be licensed by the Treasury dept. in order to perform these services. His services are valuable because the requirement for customs clearance is complicated.

As per the CHA Regulation, the obligation of CHA is:

(a) Obtain authorization from each of the companies, firms or individuals by whom he is employed as CHA and produce such authorization whenever required by an Asst. Commissioner of Customs.

(b) Not withhold information relating to clearance of cargo or baggage issued by the Commissioner of Customs from a client who is entitled to such information.

(c) Advise his client to comply with the provision of the Act and in case of noncompliance, shall bring the matter to the notice of the Assistant Commissioner of Customs.

(d) Exercise due diligence to ascertain the correctness of any information which he imparts to a client with reference to any work related to clearance of cargo.

4.6 DOCUMENTATION

Various documents are prepared and submitted for smooth movement of goods from one country to another country. In this unit, you will learn about various perspectives, kinds and functions of export-import documents. You will also learn about the documents needed for fulfilling the commercial obligations of an exporter and

importer and various legal and other documents involved in export-import trade.

Rationable for documentation

Export documentation is commonly considered to be the most complex and difficult part of overseas marketing. You may have come across such comments as such comments tend to discourage people from entering into export business. It is therefore, necessary to emphasize that documentation is as much of an important activity as the conclusion of an export order and its fulfillment.

Why is documentation needed in export business? The answer to this question lies in the nature of the business relations between the exporter and the importer, who are operating from two countries. If one is doing domestic business, one knows or can easily know the commercial practices, which bind the buyer and the seller. Similarly, the possibility of business disputes is reduced since both the buyer and the seller know or can easily know laws governing contracts. However, when the buyer and the seller are operating in two countries, the commercial practices and legal systems are different. Thus, for ensuring that the respective interests of the buyer and the seller are protected, certain documentary formalities become essential.

Similarly, every country has its own laws governing imports and exports. Consequently, the exporter has to comply with laws in his country through documentary formalities. At the same time, he has to send some documents to the importer, which will enable him to take possession of the goods after getting permission from the concerned government department (i.e. the customs authorities). There is yet another reason for documentation in export trade. Such documentation is linked with the claim of export incentives given by almost all countries world over. Since most of these incentives are to be claimed after shipment, the exporter has to give documentary proof of the fact of shipment.

Documentation formalities are necessary to enable the importer to get the contracted goods and the exporter to get sale value as well as to secure export incentives. In other words, export documents are needed to comply with commercial, legal and incentive requirements. Let us now discuss these three perspectives in detail to understand the rationale of different documents.

4.6.1 Commercial Perspective

Trade between two business firms located in different countries begins with the conclusion of an export contract. Under the contract, the duty of the exporter is to ship the contracted goods in the agreed form (e.g., packing) and by agreed mode of transport as well as according to agreed time schedule. On the other hand, it is the duty of the importer to remit sale value to the exporter according to agreed terms of payment. In this process of physical movement of goods from the exporter to the importer and remittance of sale value in the reverse order, neither the exporter nor the importer is personally and physically involved.

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Instead, goods are handed over to a shipping company or an airline which issues a receipt for these goods. Further, since goods in transit may be damaged or lost due to some accident, the exporter may be required to get an insurance policy. While these two documents will protect the interests of the importer, the exporter will ensure that these documents are not in the possession of the importer unless he has either paid for the goods or he has made a promise to make payment at a later date.

For this purpose, physical possession of the good will be linked with the acceptance of a payment document by the importer. In actual practice, a set of documents given proof of shipment and cargo insurance coverage along with a bill for payment is sent by the exporter to the importer through the banking channel.

This set of documents symbolises ownership in goods. This will be handed over to the importer by the bank in his country, which he has received it from the bank in the exporting country only when he has honored the bill. In other words, the importer will get delivery of the goods from the carrier on the basis of the transport document, which is obtained through the bank, after he has complied with the agreed terms of payment.

4.6.2 Legal Perspective

Besides commercial necessity, documents for exports have a legal perspective. All over the world, laws regulating export-import trade as well as movement of foreign exchange have been enacted. In some countries, the regulations are few, which are enforced through simple procedural and documentation formalities. In other countries, the regulations are many and the enforcement procedures are complex.

Why should there be regulations in foreign trade? There is perhaps no country in the world where movement of goods and money is absolutely free. The minimum regulations that one can think of are the one to record the movement of goods from and into a country. For this purpose, the exporter has to declare on a document the details of goods being exported by him. Other than these basic minimum requirements, the governments all over the world regulate movement of goods to protect political, economic, cultural and other interests and for implementing trade agreements with other countries.

Some countries do not have political relations with the others. As a result, goods originating from such a country are not allowed to be imported. Thus, a country, which does not permit flow of goods from certain countries, has laid down the requirement of Certificate of Origin, which states that the goods are of the country, which is exporting them. For example, some of the countries in West Asia do not allow imports from countries or companies having any relation with Israel.

4.6.3 Documents

Documents are needed for protecting the economic and social interests of the trading countries. For example, under the Indian Export policy, the government has listed out products, which either cannot be exported or can be exported only

after obtaining permission from the designated agencies. Some of the products are subject to restrictions because of their short supply in the country. Consequently, these products can be exported only after obtaining a quota, for which a documentary proof is to be submitted to the customs, authority for shipment purposes. Similarly, there are a number of government regulations governing quality, standards, foreign exchange flows, valuation of goods for calculating customs duties, etc. Compliance with these regulations necessitates documentation.

Documents are also needed for fulfilling requirements under bilateral and multilateral trade agreements. For example, an Indian exporter will need to obtain GSP, Certificate of Origin for exporting certain specified products to those countries which operate the Generalized System of preferences. Under this system, the developed country accord preferential duty treatment to specified goods originating from developing countries. The GSP certificate will enable the importer to pay concessional duty.

Incentive Perspective

Export assistance and incentive measures have become an integral part of policy in larger number of countries. Since these incentives are to be given only to the export activity, documentary proof to this effect is required to be given by the claimant to the disbursing authorities. Such a documentary proof should state that the claimant is eligible to receive the incentive, that the goods will be or have been exported according to the export contract and that the claim has been filed in the manner specified in the policy. In other words, bonafides of the claim have to be established for receiving incentives and assistance.

You may also note that for making a claim, the exporter has to file an application on the specified form that summarizes the shipment and other details.

This application is to be accompanied by a number of supporting documents to enable the incentive disbursing authority to check the authenticity of details given in the application.

Export Invoice

Invoice is a document of content. It is the exporter's bill for goods and sets forth the terms of sale. The invoice is a basic document. As a document of contents, it must fully identify the overseas shipment and serve as a basis for the preparation of all other documents which in greater or lesser detail reproduce information from it. The exporter should strictly follow the requirements of the importer in regard to invoicing.

The standard document in respect of the invoice is based on the United Nations Key Layout, which has been accepted as the basis of this document in many entries. The information requirements of the document have been determined after examining a number of forms of invoices used by leading export organizations and after series of discussions with the representatives of the Department of Customs and Central Excise and the Federation of Custom House Agents' Associations in India.

Invoices based on the suggested design will be acceptable not only in many countries but will also help facilitate processing of documents at various stages. The declaration given at the bottom (left hand) of the Invoice follows the UN recommendation. The standard invoice can be reproduced from the master by masking only three columns, i.e. Notify Party, Insured Value and No. of Original B/L No, and Date on the invoices. But under the present procedure for customs clearance and shipment of export cargo, this information, particularly in respect of the B/L No. and Date, will be available to exporters only after shipment has been effected. Where required under letter of credit, such information will need to be sent to the banks for negotiation. But for this, the rest of the information can be reproduced from the master.

The information referred to in the preceding lines can be given above the columns for Country of Origin and Final Destination in the order of name of shipping line, ETD (port of shipment), ETA (destination port) and B/L No. and Date. Unused space, in the Buyer's column and below the Consignee's Column can be utilised for incorporation of any other information which may be special to a transaction. Value and Origin Clauses can be printed on the back side of the Standard Invoice.

There may be cases when exports are required to give detailed descriptions or specifications of the various items forming part of the consignment exported in one lot. In such cases, exporters are advised to use continuation sheets to the Invoice.

4.6.4 Export Documentation

Export documentation in India has evolved a great deal particularly since 1990. Efforts are on, on a faster footing to streamline and modernize the system further. Prior to 1990, the documentation was all manual and not at all coordinated. The result was lot of delays and mistakes, rendering the task very clumsy, tiresome, repetitive and truly frustrating. India adopted the ADS in 1991. ADS refer to Aligned Documentation System, which is the internationally accepted documentation system.

ADS uses a Master Document that contains the information common to all documents forming part of the aligned series (refer to enclosed CD).

The export documentation framework in India can be best understood by classifying export documents in the following two categories:

1. Commercial documents
2. Regulatory documents.

Commercial Documents

These documents have their origin in "Custom of Trade" in international commerce and are used by exporters/importers to discharge their respective legal and other incidental responsibilities under sales contract. Commercial documents can be further sub-divided into:

(i) Principal commercial documents

(ii) Auxiliary commercial documents

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1. **Principal commercial documents:** These documents serve the following purposes:
   - To effect physical transfer of goods and title to the goods from exporter to buyer
   - To realise export sales proceeds.
   - Principal commercial documents include:
   - Commercial invoice (and the invoice prescribed by the importer)
   - Packing list
   - Certificate of inspection
   - Certificate of insurance/insurance policy
   - Bill of Lading/Airway bill/Combined transport document
   - Certificate of origin
   - Bill of exchange
   - Shipment advice.
2. **Auxiliary commercial documents:** These documents are required to prepare/procure the principal commercial documents and include:
   - Proforma invoice
   - Shipping instructions
   - Insurance declaration
   - Intimation for inspection
   - Shipping order
   - Mate's receipt
   - Application for certificate of origin
   - Letter to bank for negotiation/collection of documents

Regulatory Documents

These are prescribed by various government departments/bodies for compliance of formalities under relevant laws governing export transactions. These include:

- Exchange Control Declaration Form-GR Form
- Freight Payment Certificate
- Insurance Premium Payment Certificate
- ARE I/ARE II Forms
- Shipping Bill/Bill of Export
- Port Trust Copy of Shipping Bill/Export Application/Dock Challan
- Receipt of Payment of Port Charges
- Vehicle Ticket

A detailed description of all the commercial documents is given below:

Commercial Invoice: It is the basic and most important document in an

export transaction and extreme care has to be taken by the exporter to prepare this document. A commercial invoice must provide complete and accurate information as is expected. A slight mistake on the part of the exporter may cost him dearly. This document requires the exporter to submit details such as his own (exporter) details, invoice number with date, details of the consignee and buyer (if the buyer is other than the consignee), buyer's order number with date, country of origin of the goods, country of final destination, terms of payment and delivery, pre-carriage details (road/rail), place of receipt by pre-carrier, vessel/flight number, port of loading, port of discharge, final destination, marks and numbers, container number, number and kind of packaging, detailed description of goods, quantity, rate and total amount chargeable.

As can be seen, a commercial invoice contains the complete details of the export order right from order number to quantity, rate, packaging, mode of dispatch and shipping particulars. Normally, the trade practice is to raise and send a proforma invoice to the buyer for his approval, once the order has been finalized. On receipt of the approved proforma invoice, the exporter can use it as part of the export contract. The commercial invoice then becomes easier to prepare on the basis of the approved proforma invoice (the enclosed CD contains the formats of both a commercial invoice and a proforma invoice).

The commercial invoice serves the following objectives:

- It serves as the exporter's bill as it indicates the total chargeable amount.
- It provides both the consignor's and consignee's (buyer's details if the buyer and the consignee are different) details and the order number.
- It gives the complete details of goods being shipped, corresponding to the export order and letter of credit.
- As per the export order, the exporter is required to ship the exact quantity in the required packing. The invoice depicts both the quantity and packing, which must strictly be in accordance with the specifications of the export contract.
- It also lists the terms of delivery and payment that are to be as per the letter of credit/export contract.

Let us now learn to fill each segment of the commercial invoice one by one:

1. **Exporter:** This box appears on the top left hand corner of the commercial invoice. Here, the exporter is required to give his name and complete address specifying the city, state and country along with his phone and fax numbers. The purpose is to establish the identity of the shipper.
2. **Consignee:** This box requires details, that is, the name and complete address of the party to whom the goods are being consigned.
3. **Buyer:** Usually, the buyer and the consignee are the same. However, in cases where the buyer is different from the consignee, his details, that is, the buyer's name and complete address is to be provided in this box.

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4. **References and Numbers with Date:** In these boxes the relevant references such as exporter's quotation number with date, invoice number with date, buyer's order number with date have to be accurately filled in.
5. **Country of Origin of Goods:** The exporter has to fill this box with the name of the country where the goods have actually been produced.
6. **Country of Final Destination:** This box must provide the name of the country where the goods will be finally delivered.
7. **Terms of Delivery and Payment:** This box has to contain details of the terms of delivery like FOB, C&F, and CIF etc. and the terms of payment such as L/C (letter of credit), D/A (documents against acceptance), D/P (documents against payment) etc. These terms have been discussed in details in chapters titled "Terms of Payment" and "Methods of Payment" respectively.
8. **Pre-Carriage By:** This box should provide the name of the carrier/mode of transport used to bring the goods from the place of origin to the place where these were accepted by the pre-carrier.
9. **Place of Receipt by Pre-Carrier:** This box has to depict the name of the place where goods were accepted by the pre-carrier.
10. **Vessel/Flight Number:** This box requires the name and number details of the shipping vessel or the aircraft carrier being used for the shipment.
11. **Port of Loading:** The name of the port where goods are loaded on board ship or flight is required to be provided in this box.
12. **Port of Discharge:** The name of the port where goods are finally offloaded (airport or seaport) is to be filled in this section.
13. **Final Destination:** This box must contain the name of the place that is the final destination of the shipment. This will mean not the port of discharge but the final destination from the port of discharge in the buyer's country. For example, if the airport of the final discharge is JFK, New York, but the goods are supposed to be finally delivered at the Atlantic City, the name of Atlantic City will be given in this box.
14. **Mark Numbers and Container Number:** This box shows the various marks and numbers that are required to be put on the packed cargo. If containers are being used, then the container numbers are also required.
15. **Number and Kind of Packages:** Here, the type of packages being shipped such as cartons, bales, bags, drums, crates etc. and the total number of such packages being shipped are to be provided.
16. **Description of Goods:** The detailed description of goods being shipped is to be put in this section. The description has to be the same as required in the export order/letter of credit. If more than one type of goods is being sent, the description of each is required to be given against the respective number and kind of packages.

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17. **Quantity, Rate and Amount:** These columns must show the quantity and respective rates of each item being exported and the total amount chargeable, both in figures and words. The quantities and rates have to be the same as in the export contract.
18. **Signature with Date:** The invoice must in the end, have the signatures with date of the exporter or his authorized representative. Unless this is done, the invoice will remain incomplete and therefore ineffective.

At times, the importing buyer may ask for specific commercial invoices as per the customs/requirements of their countries:

(i) **Consular Invoice:** Some countries use consular invoice as a non-tariff barrier. Here, the exporter is required to get the commercial invoice verified by the Embassy/Consulate of the importer's country in his (exporter's) country. This certification is done by way of seal/stamp from the Commercial section of the Embassy/Consulate on payment of the requisite processing fee. For example, many of the Middle East countries require this verification for their imports from India.

(ii) **Legalized Invoice:** Many countries require the exporter to get the commercial invoice certified by the local chamber of commerce in the exporting country to verify the correctness of the invoice. Once attested, this commercial invoice becomes legalized for the importing country. For example, Mexico requires such legalized invoices for imports from India.

(iii) **Customs Invoice:** Here, the importing country requires the commercial invoice to be prepared in its own prescribed format, usually for safeguard against dumping activity. The information required is almost the same and the exporter is required to self-attest such invoices. Examples of such countries are the US, Canada and Australia.

4.7 SHIPMENT

4.7.1 Pre-shipment Export Credit

'Pre-shipment credit' means any loan or advance granted or any other credit provided by a bank to an exporter for financing the purchase, processing, manufacturing or packing of goods prior to shipment or working capital expenses for rendering of services on the basis of letter of credit opened in his favour or in favour of some other person, by an overseas buyer or a confirmed and irrevocable order for the export of goods/services from India or any other evidence of an order for export from India having been placed on the exporter or some other person, unless lodgement of export orders or letter of credit with the bank has been waived.

General

With a view to making credit available to exporters at internationally competitive rates, authorised dealers have been permitted to extend Pre-shipment Credit in Foreign Currency (PCFC) to exporters for domestic and imported inputs of exported goods at LIBOR/EURO LIBOR/EURIBOR related rates of interest as detailed below.

The Scheme

1. The scheme is an additional window for providing pre-shipment credit to Indian exporters at internationally competitive rates of interest. It will be applicable to only cash exports.
2. The exporter will have the following options to avail of export finance:
   - to avail of pre-shipment credit in rupees and then the post-shipment credit either in rupees or discounting/rediscounting of export bills under EBR Scheme.
   - to avail of pre-shipment credit in foreign currency and discount/ rediscounting of the export bills in foreign currency under EBR Scheme.
   - to avail of pre-shipment credit in rupees and then convert drawals into PCFC at the discretion of the bank.

   (i) Choice of currency:
      - The facility may be extended in one of the convertible currencies viz. US Dollars, Pound Sterling, Japanese Yen, Euro, etc.
      - To enable the exporters to have operational flexibility, it will be in order for banks to extend PCFC in one convertible currency in respect of an export order invoiced in another convertible currency. For example, an exporter can avail of PCFC in US. Dollar against an export order invoiced in Euro. The risk and cost of cross currency transaction will be that of the exporter.

   (ii) Banks are permitted to extend PCFC for exports to ACU countries.

   (iii) The applicable benefit to the exporters will accrue only after the realisation of the export bills or when the resultant export bills are rediscounted on 'without recourse' basis.

4.7.2 Post-shipment Export Credit

'Post-shipment Credit' means any loan or advance granted or any other credit provided by an institution to an exporter of goods/services from India from the date of extending credit after shipment of goods/rendering of services to the date of realisation of export proceeds.

Gold Card Scheme for Exporters

(a) Gold Card holders will be given preference for grant of packing credit in foreign currency (PCFC).

(b) Gold Card holders, on the basis of their track record of timely realization of export bills, will be considered for issuance of foreign currency credit cards for meeting urgent payment obligations, etc.

(c) Banks may ensure that the PCFC requirements of the Gold Card holders are met by giving them priority over non-export borrowers with regard to granting loans out of their FCNR (B) funds etc.

(d) Banks will consider granting term loans in foreign currency in deserving cases out of their FCNR (B), RFC, etc. funds. (Banks may not grant such loans from their overseas borrowings under the 25 per cent window of overseas borrowings.)

(e) The credit to Indian exporters should be at rates of interest not exceeding LIBOR + 1.00 per cent (against 0.75 percent up to April 17, 2006).

Shipping Order

When the cargo is loaded on the ship, the commanding officer of the ship will issue a receipt called the mate receipt for goods. The mate receipt is first handed over to the port trust authorities so that all port dues are paid by the exporter to the port trust. After making payment of all port dues, the merchant or the agent will collect the mate receipt from the port dues, the merchant or the agent will collect shipping agent only after the mate receipt has been obtained.

The aligned shipping order and the Mate's Receipt have been prepared after examining the forms of the two documents issued by different shipping companies. The information required in these documents can be reproduced with great ease from the master. The issuance of these documents in the standard form will also facilitate the processing of documents at various stages, particularly at ports where exporters are required to submit shipping orders along with other documents to the port trust's office, as also the customs certification on various other documents on the basis of the mate's receipt. In order, however, that the shipping order and the mate's receipt.

In order, however, that the shipping order and the mate's receipt can be reproduced from the master, blank forms of these documents will need to be made available to exporters by the shipping lines.

Under the present commercial practice with regard to the issuance of the mate's receipt, this document was prepared by the ship's staff and signed by Chief Officer if the Ship after goods is loaded on the board. This document was required to be exchanged immediately for shipping Company's Bill of lading duly signed by an authorized officer of the company. With the inclusion of the mate's receipt in the aligned series of documents, it would be possible to roll it off at the master at the reproduction stage and keep it ready for the signature by ship's chief officer after the consignment is shipped. This will considerably reduce the time and money involved in the preparation of this document, but will require the blank standard forms of

document to be made available to the shippers. If for some reasons it is not possible to do so, it is suggested that the shipping lines operating in India's overseas trade should issue the mate's receipt in the standard form for this document.

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Shipping Bills

Shipping bills required by the customs. It is only after the shipping bill is stamped by the customs the cargo is allowed to be carted to the docks. The aligned shipping bill has been prepared after taking into consideration the requirement of Custom's Public Notice No.39 which suggests a uniform shipping bill for different categories of exports, viz. free goods dutiable goods and goods under claim for drawback as the standard A4 size paper defies accommodation of all the information requirements as per this public notice. Some columns for duties and drawback particulars have been printed on the back of standard shipping bill.

It is also not possible to accommodate all the declaration as per the public notice. Care has, however, been taken to incorporate those declarations that are material to exporting goods and claiming duty and drawback. Other declarations that have been not included in the standard shipping bill can be taken as implied.

The name and address the custom house agent and also the CHA code No. can be printed in the box. Provided for the purpose to facilitate identification of different category of shipping bills, it will be desirable to introduce uniform colour schemes at all the ports. Identification will be easier and quiker a different category of shipping bills can be distinguished by the colour of the form rather by the colour of the letter print of the shipping bill.

4.8 DELIVERY TO DISTRIBUTION CENTERS

A distribution method whereby containers or cargo are transferred from one vessel to another to reach their final destination, compared to a direct service from the load port of origin to the discharge port of destination. This method is often used to gain better vessel utilization and thereby economies of scale by consolidating cargo onto larger vessels while transiting in the direction of main trade routes.

Feeder Service

Transport service whereby loaded or empty containers in a regional area are transferred to a "mother ship" for a long-haul ocean voyage.

Intermodal

Movement of cargo containers interchangeably between transport modes, for example from ship to rail, naturally this is possible where the equipment is compatible within the multiple systems.

Service Routes

Currently, shipping lines operate three general types of deep-sea itineraries: end to end, pendulum and round the world service routes, which are shown in Figure. End to end services schedule vessels back and forth between two continents. Pendulum services schedule vessels back and forth between three continents with one of these continents as a fulcrum, with the points at either end of the pendulum swing linked only through the fulcrum. This type of service offers a way to fill container slots four times on the same voyage and to eliminate certain overlapping port calls in the fulcrum area. The merging of separate end-to-end services into a pendulum or round the world service serves the two main purposes of broadening the range of through services and reducing the number of ships required to provide the same coverage. This gives a major cost saving by merging the previously duplicated port calls in the central region of the pendulum. Also round the world services can overcome the problems of end-to-end operations, by accommodating the needs of global corporations. The world's three principal trade corridors are tied together into one and this type of service can move in either direction, moving westward or eastward or in both directions.

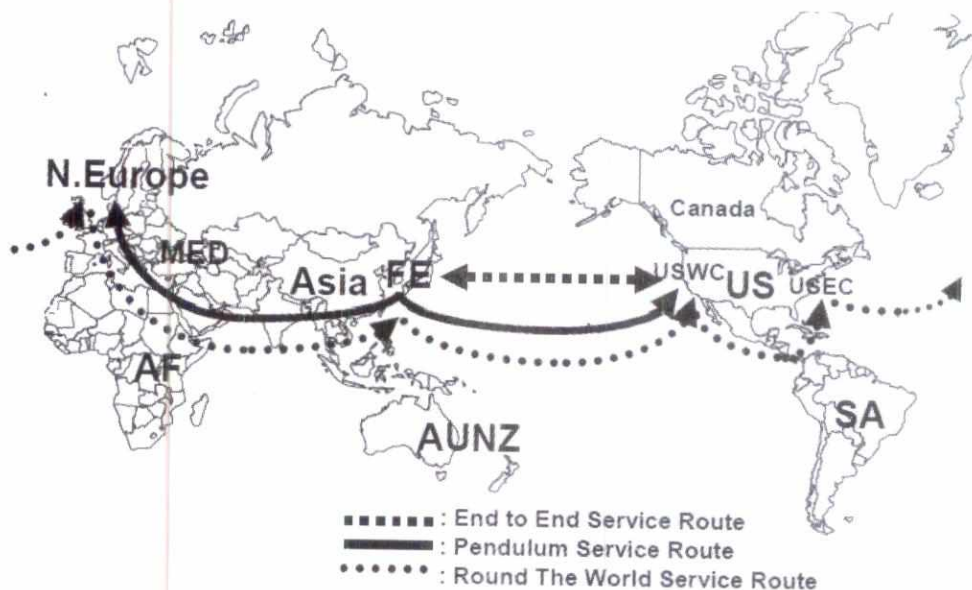


Fig. 4.1: Three types of liner service routes

Intense competition in container markets not only makes it necessary for ship owners to offer high quality services between major trading regions but also makes it imperative for them to optimize fleet utilization. Such pressures have led to the development of multi-route operating patterns, notably 'Round-the-World' and 'Pendulum' services, enabling carriers to maximize vessel employment and slot utilization.

North America-Europe-Asia, with vessels continually circling the globe in an eastbound or westbound direction. 'Pendulum' services, operated by a large number

of carriers including Hanjin and Yang Ming, typically operate over all or some portion of the route linking the East Coast of North America, via Europe and Asia to the West Coast of North America, returning via the same route. Since vessels employed on 'Pendulum' services, unlike those employed in RTW services, are not required to transit the Panama Canal, post-Panamax vessels may be used.

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4.8.1 Non-Vessel Operating Common Carrier (NVOCC)

A cargo consolidator in ocean trades who buys space from a carrier and resells it to smaller shippers. The NVOCC issues bills of lading, publishes tariffs, and otherwise conducts itself as an ocean common carrier, except that it does not provide the actual ocean or intermodal service. NVOCC was first defined in the U.S. Shipping Act of 1984, according to which "NVOCC means a common carrier that does not operate the vessels by which the ocean transportation is provided, and is a shipper in its relationship with an ocean common carrier."

Under the Act, the NVOCC, as a common carrier, is subject to supervision by the U.S. Federal Maritime Commission (FMC). This means that the NVOCC must file its tariffs with the FMC and that it must deposit US$50,000 with the commission as proof of its financial soundness. Today, a commonly used definition for NVOCC is "a cargo consolidator in ocean trades who will buy space from a carrier and sub-sell it to smaller shippers." The NVOCC issues bills of lading, publishes tariffs and otherwise conducts itself as an ocean carrier, except that it will not provide the actual ocean or intermodal service. Meanwhile, in trades other than U.S.-related ones, the NVOCC does not necessarily operate under a strict interpretation of the law. In many cases, it seems regarded as an international intermodal transport service provider who uses the services of common carriers, including shipping companies, and issues its own combined transport B/Ls (house B/Ls).

4.9 DISTRIBUTORS AND LASTLY THE RETAIL OUTLETS

Finished Goods supply chains are very dynamic and are the backbone of a good sales organization a number of departments are responsible to work in coordination and seamlessly to ensure Finished Goods reach the markets and the customers. Logistics and supply chain departments have to work in tandem with or aim to be ahead of Marketing and Sales and ensure that when a product is announced for sale by marketing, the products are made available at all nook and corner of the city, state and country. A situation where the customer goes to a sales counter to place an order and the product is not available cannot and should never happen as a rule.

Taking customer as the starting point, let us trace back the journey of finished goods and the functions. While Marketing departments work on marketing and advertising the product and are focused on reaching out to the customer to sell a product to him. Whenever a customer places an order, further coordination and

deliveries are managed by order fulfillment teams which are responsible for sales order processing who place orders on the distribution centers on the backend to pull materials for forward stocking points or to effect deliveries to the customers. Customer Fulfillment teams are the internal customers to the FG Logistics team. Logistics team is the department which is responsible for stocks and FG inventory held in the pipeline across multiple networks of distribution centers and the inventory in pipeline in various transit points. In other words, Logistics teams own the inventory from the point they leave the plant until delivery is effected to the customer who may be a distributor, retailer or end user as the case may be.

Logistics teams comprise of multiple competency centers including inventory planners, freight managers responsible for transportation leg and warehousing operations experts who are responsible for the inventory and warehousing operations including documentation control and statutory process compliance.

Logistics teams work in close co-ordination with finance teams, the procurement team, plants and manage operations through a chain of third party service providers who actually run the operations of inventory handling and distribution.

Logistics is never an event free operation. While multi tier third party service providers are handling the cargo across various borders, locations each with its own unique local situations, there are very many additional vagaries of nature and events that can keep disrupting the smooth flow of supplies and the situation is every dynamic.

Managing multiple product lines, and vast distribution networks coupled with managing third party partners calls for the Logistics Managers and Supply Chain Managers to be always thinking on their feet and constantly innovating new processes and finding new ways to keep operations happening smoothly.

4.10 IMPORT LOGISTICS

Technology and third-party providers can help streamline the importing process and speed cycle time while complying with increased regulatory requirements. Companies that manage imports well can compress cycle times and squeeze costs out of their supply chains. Those that don't can be hit with penalties and fines. They can also suffer bottlenecks, or even complete disruption of their supply chains.

Managing imports is not a simple task. Importing a single shipment involves dozens of parties and complying with numerous requirements. The complex importing process is complicated further by the evolving requirements of the U.S. Bureau of Customs and Border Protection. These requirements can have significant impact on a company's supply chain. Take the 24-Hour Rule, which requires advance manifesting of a U.S.-bound ocean container before it can be loaded at the originating dock. This new rule can add processing fees as well as days to a company's cycle time.

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With multiple opportunities for delays, supply chain execution in today's fluid environment requires minimizing uncertainty through effective management and use of technology. It's no wonder that logistics and supply chain professionals are increasingly involved in international trade.

"We used to deal largely with compliance managers—now we deal with high-level logistics managers," notes Ted Iwaszkiw, vice president, Menlo Worldwide Trade Services, Middleburg Heights, Ohio.

"A huge portion of materials that businesses deal with today has to move across borders," says certified broker Stephen Gould, president of Gould and Associates Global Supply Chain Services, Beachwood, Ohio, and member of the adjunct faculty at Case Western University. "It's impossible to separate the physical cross-border movement of goods from the trade and customs issues associated with those movements."

For companies that import, "everyone from senior management on down has to understand the total supply chain to make sure they provide their customers with the ultimate solution at the lowest possible cost," notes Janet Reuter, director of import and export compliance for Rockwell Automation Inc., headquartered in Cleveland, Ohio.

That's not always the case, however, because many companies don't take an integrated approach to managing imports. "At some companies, customs people and logistics people do not communicate," Gould says. "Or, if they do, the communications are ineffective. As a result, the total picture tends to get lost, so companies may not have a true idea of what it really costs to move product across multiple borders through their supply chain."

Here's what you need to know to optimize imports and speed cycle time while complying with increased regulatory requirements.

Effectively managing imports requires understanding the three flows that are involved in the process:

1. **Information flow:** Managing imports depends on effectively managing information. "Logisticians must understand what data needs to move when and where in order to make international transactions happen effectively," says Gould. Information flow also involves understanding taxes, tariffs, and other elements of trade compliance, as well as security regulations.
2. **Fiscal flow:** "Financial transactions have become more and more complex," notes Shanna O'Brien, customs compliance director for Honeywell International Inc., Phoenix. "There's a lot of room to stumble, so you have to be very savvy."

   Understanding fiscal flow means knowing who needs to be paid—including suppliers, customs and tax authorities, 3PLs, packers and others—as well as when and how they need to be paid.

   "If you don't pay them at the right time, in the right way, your goods could be stopped. Or you could have supply chain interruptions leading to use of premium freight services or, worse, loss of customer relationships," Gould warns.

3. **Physical flow:** Understanding the physical movement of goods means accurately knowing how and where your goods will move, how they'll be handled, where they'll be stored, and the costs associated with this.

   "Every time someone touches your goods—whether loading, unloading, or inspecting them—it adds costs and increases the likelihood of damage or pilferage," Gould says. In addition, make sure you know what condition your goods will be in from source to ultimate consumer (such as sitting on a dock awaiting inspection), so that you can ensure appropriate packaging.

   Understanding the physical flow also means having a true picture of timing. "If you bring in goods from China via ocean freight, they may be locked in a box for 20-plus days and you can't touch them," Gould says. "If you haven't built into your planning the time when you can't touch your freight—whether it's on the water, in the belly of an airplane, or sitting in a customs warehouse—you may run into a situation where you don't have the goods you need."

4.10.1 India's Import Regime

India's import regime had two major kinds of protective barriers: (i) Non-tariff controls and (ii) Tariffs.

Non-Tariff Controls: Non-tariff controls were the principal means of regulating imports and protecting local industries. These controls till the 90s included the (a) import licensing system, (b) canalisation, (c) actual user policy and (d) phased manufactured programmes.

(i) Import Licensing System: This system divides imports into three categories:

(a) Consumer goods
(b) Capital goods
(c) Intermediate raw materials, components, spare parts and supplies.

Imports of consumer goods are generally banned, excluding those which are imported by canalising agencies of the Government. These products may be judged by the Government as essential on the grounds that they are not produced locally or domestic production is insufficient to meet the local demand. e.g.: edible oil, certain drugs and medicines, kerosene, and food grains. Capital goods are divided into a "restricted category" and an "Open General Licence" (OGL) category. OGL capital goods can be imported without a licence, provided the importing firm is the actual user of the machinery. An import license is required for the import of any item on the restricted list and also for any item not on the OGL list, even if it is not on the restricted list. Finally, intermediate goods imports are divided into banned, restricted, limited permissible and OGL categories. Intermediate goods that are not on the first three lists, nor on the separate lists of canalised items, could be imported without a Licence.

(ii) Canalisation: Canalising agencies are another means through which the Government exercises control over imports. These organisations are the sole importers of products listed in the EXIM Policy. The most important canalised products and the respective agencies are given in Table.

TABLE 4.1: Canalisation: Items and Agencies

Item	Canalising Agency
1. Crude Oil and Petrolium Products	Indian Oil Corporation (I.O.C.)
2. Iron and Steel, non-ferrous metal and fertilisers	Minerals and Metals Trading Corporation (M.M.T.C)
3. Edible oils, natural rubber, Sugar, news print and Cement	State Trading Corporation (S.T.C.)
4. Scrap Metal	Metal Scrap Trading Corporation (M.S.T.C.)
5. Cerals	Food Corporation of India (F.C.I.)
6. Cotton	Cotton Corporation of India (C.C.I.)

Canalised importers account for a significant share in total imports including Petroleum, Oil and Lubricants (P.O.L.). Policies on the importing, pricing and distribution of the most important canalised products are determined and supervised by the concerned ministries or departments and others by two committees chaired by the Chief Controller of Imports and Exports. The activities of the canalising agencies are an integral part of the system of nontariff discretionary controls over imports.

(iii) Actual User Policy: This policy disallows imports for resale by excluding intermediaries from importing. The policy was introduced in the early 70s and became complete in April 1977 with the abolition of the category of "Established Importers" who were earlier eligible for import licenses. As per this policy, only the actual user of capital good or intermediate products is allowed to import such goods, through import licenses.

(iv) Phased Manufacturing Programme (PMP.): As per PMP, the concerned firm agrees to progressively replace imported materials, parts and components with materials, parts and components produced in-house or by other Indian firms. The PMPs accompany industrial licences in a wide range of industries involving assembly of parts and components notably, vehicle, and machinery and electronics industries.

In order to ensure that a firm sticks to PMP, the import of all parts and components by that firm requires prior clearance by the sponsoring authority for the industry, which attests that the imports are not included in the list of products that should be locally sourced under the PMP. The PMP procedures, therefore, amount

to a separate set of quantitative import controls which apply to many intermediate products, including those which appear on OGL lists, and which in theory are importable without restriction. Moreover the controls continue to remain in force, since once the required level of indigenisation is achieved; surveillance continues to ensure that firms do not reduce the agreed indigenization levels.

Tariffs: The tariffs consist of:

1. basic customs duties, mostly and valorem, applied to the c.i.f. price of the import.
2. an auxiliary duty applied to the c.i.f. price, and
3. additional duties equivalent to excise taxes imposed on locally produced products, applied to the c.i.f. price plus the basic customs duty and auxiliary duty.

The basic and valorem duties range from zero to 300 percent; the general auxiliary duty is 40 percent. The tariff schedule appears very simple, with quite uniform basic customs duties. But in practice, tariff based protection is extremely complex, owing to a large number of exemptions for various products for all three components. It is difficult to generalise the level and structure of tariffs because of various kinds of exemptions. However, the general level of duties was extremely high absolutely as well as relatively, before allowing for exemptions.

Indian tariffs were much higher than tariffs in other developing countries: average Indian tariffs for intermediate, capital and consumer goods as well as for manufactured goods as a whole were much higher than in other countries.

4.10.2 Documents Collection and Valuing

1. **Importer Exporter Code (IEC) Number:** No person can import or export goods without obtaining an Importer-Exporter Code (IEC) Number unless he has been specifically exempted. The IEC Number is obtained from the Regional Licensing Authority.
2. **Bill of Entry:** It is a document on which clearance of imported goods is effected. All goods discharged from a vessel, from foreign or coastal ports are cleared on Bill of Entry in the prescribed form. The Bill of Entry form has been standardised by the Central Board of Excise and Customs.

Four copies of bill of entry are submitted, original and duplicate for customer departments, triplicate is owner's copy and the fourth copy is for the purpose of foreign exchange to be submitted to the bank. There are three types of Bill of Entry as discussed below:

- Bill of Entry for home consumption (white in colour): where an importer wants to get his goods cleared in one lot, he has to present the Bill of Entry for home consumption.

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- Bill of Entry for warehousing (into bond, yellow in colour): Where an importer wants to shift goods to a warehouse and thereafter gets his goods cleared in small lots, he has to present 'into bond' bill of entry. Reason may be that he is, unable to pay duty leviable on all goods at one instance or may be because of storage problem.
- Ex-Bond Bill of Entry (Green in Colour): When an importer wants to remove goods from the warehouse, he has to present an Ex-Bond Bill of Entry which is green in colour.

For imports through the medium of post there is no bill of entry. Instead a way bill is prepared by the foreign post office for assessment of duty.

4.10.3 Procedure for Clearance of Imported Goods

Bill of Entry – Cargo Declaration

1. Goods imported in a vessel/aircraft attract customs duty and unless these are not meant for customs clearance at the port/airport of arrival by particular vessel/aircraft and are intended for transit by the same vessel/aircraft or transshipment to another customs station or to any place outside India, detailed customs clearance formalities of the landed goods have to be followed by the importers. In regard to the transit goods, so long as these are mentioned in import report/IGM for transit to any place outside India, Customs allows transit without payment of duty. Similarly for goods brought in by particular vessel aircraft for transshipment to another customs station detailed customs clearance formalities at the port/airport of landing are not prescribed and simple transshipment procedure has to be followed by the carrier and the concerned agencies. The customs clearance formalities have to be complied with by the importer after arrival of the goods at the other customs station. There could also be cases of transshipment of the goods after unloading to a port outside India. Here also simpler procedure for transshipment has been prescribed by regulations, and no duty is required to be paid. (Sections 52 to 56 of the Customs are relevant in this regard).
2. For other goods, which are offloaded importers, have the option to clear the goods for home consumption after payment of the duties leviable or to clear them for warehousing without immediate discharge of the duties leviable in terms of the warehousing provisions built in the Customs Act. Every importer is required to file in terms of the Section 46 an entry (which is called Bill of entry) for home consumption or warehousing in the form, as prescribed by regulations.
3. If the goods are cleared through the EDI system no formal Bill of Entry is filed as it is generated in the computer system, but the importer is required to file a cargo declaration having prescribed particulars required for processing of the entry for customs clearance.

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4. The Bill of entry, where filed, is to be submitted in set, different copies meant for different purposes and also given different colour scheme, and on the body of the bill of entry the purpose for which it will be used is generally mentioned in the non-EDI declaration.
5. The importer clearing the goods for domestic consumption has to file bill of entry in four copies; original and duplicate are meant for customs, third copy for the importer and the fourth copy is meant for the bank for making remittances.
6. In the non-EDI system along with the bill of entry filed by the importer or his representative the following documents are also generally required:
   - ❖ Signed invoice
   - ❖ Packing list
   - ❖ Bill of Lading or Delivery Order/Airway Bill
   - ❖ GATT declaration form duly filled in
   - ❖ Importers/CHA's declaration
   - ❖ License wherever necessary
   - ❖ Letter of Credit/Bank Draft/wherever necessary
   - ❖ Insurance document
   - ❖ Import license
   - ❖ Industrial License, if required
   - ❖ Test report in case of chemicals
   - ❖ Adhoc exemption order
   - ❖ DEEC Book/DEPB in original
   - ❖ Catalogue, Technical write up, Literature in case of machineries, spares or chemicals as may be applicable
   - ❖ Separately split up value of spares, components machineries
   - ❖ Certificate of Origin, if preferential rate of duty is claimed
   - ❖ No Commission declaration
7. While filing the bill of entry and giving various particulars as prescribed therein the correctness of the information given has also to be certified by the importer in the form a declaration at the foot of the bill of entry and any mis-declaration/ incorrect declaration has legal consequences, and due precautions should be taken by importer while signing these declarations.
8. Under the EDI system, the importer does not submit documents as such for assessment but submits declarations in electronic format containing all the relevant information to the Service Centre. A signed paper copy of the declaration is taken by the service centre operator for non-reputability of the declaration. A checklist is generated for verification of data by the importer/ CHA. After verification, the data is submitted to the system by the Service Centre Operator and system then generates a B/E Number, which is endorsed on the

printed checklist and returned to the importer/CHA. No original documents are taken at this stage. Original documents are taken at the time of examination. The importer/CHA also need to sign on the final document after Customs clearance.

9. The first stage for processing a bill of entry is what is termed the noting of the bill of entry, vis-à-vis, the IGM filed by the carrier. In the non-EDI system the importer has to get the bill of entry noted in the concerned unit which checks the consignment sought to be cleared having been manifested in the particular vessel and a bill of entry number is generated and indicated on all copies. After noting the bill of entry gets sent to the appraising section of the Custom House for assessment functions, payment of duty etc. In the EDI system, the Steamer Agents get the manifest filed through EDI or by using the service centre of the Custom House and the noting aspect is checked by the system itself – which also generates bill of entry number.

10. After noting/registration of the Bill of entry, it is forwarded manually or electronically to the concerned Appraising Group in the Custom House dealing with the commodity sought to be cleared. Appraising Wing of the Custom House has a number of Groups dealing with earmarked commodities falling under different Chapter Headings of the Customs Tariff and they take up further scrutiny for assessment, import permissibility etc. angle.

Assessment:

11. The basic function of the assessing officer in the appraising groups is to determine the duty liability taking due note of any exemptions or benefits claimed under different export promotion schemes. They have also to check whether there are any restrictions or prohibitions on the goods imported and if they require any permission/license/permit etc. and if so whether these are forthcoming. Assessment of duty essentially involves proper classification of the goods imported in the customs tariff having due regard to the rules of interpretations, chapter and sections notes etc., and determining the duty liability. It also involves correct determination of value where the goods are assessable on ad valorem basis. The assessing officer has to take note of the invoice and other declarations submitted along with the bill of entry to support the valuation claim, and adjudge whether the transaction value method and the invoice value claimed for the basis of assessment is acceptable, or value needs to be predetermined having due regard to the provisions of Section 14 and the valuation rules issued there under, the case law and various instructions on the subject. He also takes note of the contemporaneous values and other information on valuation available with the Custom House.

12. Where the appraising officer is not very clear about the description of the goods from the document or as some doubts about the proper classification, which may

be possible only to determine after detailed examination of the nature of the goods or testing of its samples, he may give an examination order in advance of finalization of assessment including order for drawing of representative sample. This is done generally on the reverse of the original copy of the bill of entry which is presented by the authorized agent of the importer to the appraising staff posted in the Docks/Air Cargo Complexes where the goods are got examined in the presence of the importer's representative.

13. On receipt of the examination report the appraising officers in the group assesses the bill of entry. He indicates the final classification and valuation in the bill of entry indicating separately the various duties such as basic, countervailing, anti-dumping, safeguard duties etc. that may be leviable. Thereafter the bill of entry goes to Assistant Commissioner/Deputy Commissioner for confirmation depending upon certain value limits and sent to comptist who calculates the duty amount taking into account the rate of exchange at the relevant date as provided under Section 14 of the Customs Act.
14. After the assessment and calculation of the duty liability the importer's representative has to deposit the duty calculated with the treasury or the nominated banks, where after he can go and seek delivery of the goods from the custodians.
15. Where the goods have already been examined for finalization of classification or valuation no further examination/checking by the dock appraising staff is required at the time of giving delivery and the goods can be taken delivery after taking appropriate orders and payment of dues to the custodians, if any.
16. In most cases, the appraising officer assesses the goods on the basis of information and details furnished to the importer in the bill of entry, invoice and other related documents including catalogue, write-up etc. He also determines whether the goods are permissible for import or there are any restriction/ prohibition. He may allow payment of duty and delivery of the goods on what is called second check/appraising basis in case there are no restriction/prohibition. In this method, the duties as determined and calculated are paid in the Custom House and appropriate order is given on the reverse of the duplicate copy of the bill of entry and the importer or his agent after paying the duty submits the goods for examination in the import sheds in the docks etc., to the examining staff. If the goods are found to be as declared and no other discrepancies/mis-declarations etc., are detected, the importer or his agent can clear the goods after the shed appraiser gives out of charge order.
17. Wherever the importer is not satisfied with the classification, rate of duty or valuation as may be determined by the appraising officer, he can seek an assessment order. An appeal against the assessment order can be made to appropriate appellate authority within the time limits and in the manner prescribed.

EDI Assessment:

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18. In the EDI system of handling of the documents/declarations for taking import clearances as mentioned earlier the cargo declaration is transferred to the assessing officer in the groups electronically.
19. The assessing officer processes the cargo declaration on screen with regard to all the parameters as given above for manual process. However in EDI system, all the calculations are done by the system itself. In addition, the system also supplies useful information for calculation of duty, for example, when a particular exemption notification is accepted, the system itself gives the extent of exemption under that notification and calculates the duty accordingly. Similarly, it automatically applies relevant rate of exchange in force while calculating. Thus no comptist is required in EDI system. If assessing officer needs any clarification from the importer, he may raise a query. The query is printed at the service centre and the party replies to the query through the service centre.
20. After assessment, a copy of the assessed bill of entry is printed in the service centre. Under EDI, documents are normally examined at the time of examination of the goods. Final bill of entry is printed after 'out of charge' is given by the Custom Officer.
21. In EDI system, in certain cases, the facility of system appraisal is available. Under this process, the declaration of importer is taken as correct and the system itself calculates duty which is paid by the importer. In such case, no assessing officer is involved.
22. Also, a facility of tele-enquiry is provided in certain major Customs stations through which the status of documents filed through EDI systems could be ascertained through the telephone. If nay query is raised, the same may be got printed through fax in the office of importer/exporter/CHA.

Examination of Goods:

23. All imported goods are required to be examined for verification of correctness of description given in the bill of entry. However, a part of the consignment is selected on random selection basis and is examined. In case the importer does not have complete information with him at the time of import, he may request for examination of the goods before assessing the duty liability or, if the Customs Appraiser/Assistant Commissioner feels the goods are required to be examined before assessment, the goods are examined prior to assessment. This is called First Appraisement. The importer has to request for first check examination at the time of filing the bill of entry or at data entry stage. The reason for seeking First Appraisement is also required to be given. On original copy of the bill of entry, the Customs Appraiser records the examination order and returns the bill of entry to the importer/CHA with the direction for examination, which

is to take it to the import shed for examination of the goods in the shed. Shed Appraiser/Dock examiner examines the goods as per examination order and records his findings. In case group has called for samples, he forwards sealed samples to the group. The importer is to bring back the said bill of entry to the assessing officer for assessing the duty. Appraiser assesses the bill of entry. It is countersigned by Assistant/Deputy Commissioner if the value is more than ₹ 1 lakh.

24. The goods can also be examined subsequent to assessment and payment of duty. This is called Second Appraisement. Most of the consignments are cleared on second appraisement basis. It is to be noted that whole of the consignment is not examined. Only those packages which are selected on random selection basis are examined in the shed.

25. Under the EDI system, the bill of entry, after assessment by the group or first appraisement, as the case may be, need to be presented at the counter for registration for examination in the import shed. A declaration for correctness of entries and genuineness of the original documents needs to be made at this stage. After registration, the B/E is passed on to the shed Appraiser for examination of the goods. Along-with the B/E, the CHA is to present all the necessary documents. After completing examination of the goods, the Shed Appraiser enters the report in System and transfers first appraisement B/E to the group and gives 'out of charge' in case of already assessed Bs/E. Thereupon, the system prints Bill of Entry and order of clearance (in triplicate). All these copies carry the examination report, order of clearance number and name of Shed Appraiser. The two copies each of B/E and the order are to be returned to the CHA/Importer, after the Appraiser signs them. One copy of the order is attached to the Customs copy of B/E and retained by the Shed Appraiser.

Green Channel Facility:

26. Some major importers have been given the green channel clearance facility. It means clearance of goods is done without routine examination of the goods. They have to make a declaration in the declaration form at the time of filing of bill of entry. The appraisement is done as per normal procedure except that there would be no physical examination of the goods. Only marks and number are to be checked in such cases. However, in rare cases, if there are specific doubts regarding description or quantity of the goods, physical examination may be ordered by the senior officers/investigation wing like SIIB.

Execution of Bonds:

27. Wherever necessary, for availing duty free assessment or concessional assessment under different schemes and notifications, execution of end use

bonds with Bank Guarantee or other surety is required to be furnished. These have to be executed in prescribed forms before the assessing Appraiser.

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Payment of Duty:

28. The duty can be paid in the designated banks or through TR-6 challans. Different Custom Houses have authorised different banks for payment of duty. It is necessary to check the name of the bank and the branch before depositing the duty. Bank endorses the payment particulars in challan which is submitted to the Customs.

Amendment of Bill of Entry:

29. Whenever mistakes are noticed after submission of documents, amendments to the entry is carried out with the approval of Deputy/Assistant Commissioner. The request for amendment may be submitted with the supporting documents. For example, if the amendment of container number is required, a letter from shipping agent is required. Amendment in document may be permitted after the goods have been given out of charge i.e. goods have been cleared on sufficient proof being shown to the Deputy/Assistant Commissioner.

Prior Entry for Bill of Entry:

30. For faster clearance of the goods, provision has been made in section 46 of the Act, to allow filing of bill of entry prior to arrival of goods. This bill of entry is valid if vessel/aircraft carrying the goods arrive within 30 days from the date of presentation of bill of entry.
31. The importer is to file 5 copies of the bill of entry and the fifth copy is called Advance Noting copy. The importer has to declare that the vessel/aircraft is due within 30 days and they have to present the bill of entry for final noting as soon as the IGM is filed. Advance noting is available to all imports except for into bond bill of entry and also during the special period.

Mother Vessel/Feeder Vessel:

32. Often in case of goods coming by container ships they are transferred at intermediate ports (like Ceylon) from mother vessel to smaller vessels called feeder vessels. At the time of filing of advance noting B/E, the importer does not know as to which vessel will finally bring the goods to Indian port. In such cases, the name of mother vessel may be filled in on the basis of the bill of lading. On arrival of the feeder vessel, the bill of entry may be amended to mention names of both mother vessel and feeder vessel Specialized Schemes.
33. The import of goods is made under specialised schemes like DEEC or EOU etc. The importer in such cases is required to execute bonds with the Customs authorities for fulfillment of conditions of respective notifications. If the

NOTES

importer fails to fulfill the conditions, he has to pay the duty leviable on those goods. The amount of bond would be equal to the amount of duty leviable on the imported goods. The bank guarantee is also required along with the bond. However, the amount of bank guarantee depends upon the status of the importer like Super Star Trading House/Trading House etc.

Bill of Entry for Bond/Warehousing:

34. A separate form of bill of entry is used for clearance of goods for warehousing. All documents as required to be attached with a Bill of Entry for home consumption are also required to be filed with bill of entry for warehousing. The bill of entry is assessed in the same manner and duty payable is determined. However, since duty is not required to be paid at the time of warehousing of the goods, the purpose of assessing the goods at this stage is to secure the duty in case the goods do not reach the warehouse. The duty is paid at the time of ex-bond clearance of goods for which an ex-bond bill of entry is filed. The rate of duty applicable to imported goods cleared from a warehouse is the rate in-force on the date on which the goods are actually removed from the warehouse. (References: Bill of Entry (Forms) Regulations, 1976, ATA carnet (Form Bill of Entry and Shipping Bill) Regulations, 1990, Uncleared goods (Bill of entry) regulation, 1972, , CBEC Circulars No. 22/97, dated 4/7/1997, 63/97, dated 21/11/1997).

4.11 BONDED WAREHOUSING

Bonded Warehouse is a secured Customs approved facility where cargo and containers are stored under close surveillance. Bonded warehouses are warehouses in which dutiable goods may be stored without paying the duties on such goods. For importers, there are a number of advantages to using bonded warehouses which make them a popular storage option in many ports all over the world. Different governments have different laws about how such warehouses can be administered and who can use or operate a bonded warehouse. There are two types of bonded warehouses. They are Private and Public bonded warehouses. The private warehouses are licensed for the storage of the licensee's goods while the general bonded warehouses are licensed to store goods for all traders.

Also known as a customs warehouse, a bonded warehouse acts sort of like a no man's land where goods can be deposited without an importer or an agent needing to pay duties on them. If the importer decides to sell the goods for re-export, duties will not be incurred. Likewise, if the goods are destroyed, the obligation to pay duties will also be resolved. If the imported goods are released for sale, however, customs duties will come due.

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Importers appreciate the flexibility of bonded warehouses, as if they can't get a good price for goods domestically or can't sell them at all, they can sell them for re-export without having to worry about the duties which might already have been paid. Paying duties on arrival can also be expensive, and using a bonded warehouse allows importers to access funds from the sale to pay the duties, rather than having to pay duties in advance. Customs officials also use bonded warehouses to store impounded or confiscated goods while working out what is going to happen to the goods, thereby ensuring that people don't pay duties on goods they cannot use.

Some bonded warehouses are operated by the government. Others are run by third parties which contract out their warehouse space, and in some cases they may take on the responsibility for paying duties, while in other instances, the importer or agent who arranges for the storage is responsible. Import/export companies may maintain their own bonded warehouses for the convenience of themselves and their clients, especially if they do a great deal of business.

Individuals who want to open bonded warehouses generally need to file applications with Customs in the nations where they intend to operate warehouses. The application process can be complex and lengthy, and some people choose to contract it out to a lawyer who is experienced in such issues.

In addition to meeting customs requirements, bonded warehouse operators may also need to meet requirements set by the port where they operate, including providing evidence of insurance, installation of security systems, and measures to prevent loss due to fire or contamination.

4.11.1 Customs Formalities

When the Cargo lands at the Customs Bonded W/house, along with Customs Clearance, the licensed items would need to be inspected and approved for clearance by these specific agencies too. Customs brokers carry out the necessary process of submitting documentation, facilitate sampling and inspection and follow up to obtain approvals.

All cargo being imported as well as export from a country would have to be deposited at Customs Bonded warehouse to complete export and import formalities and receive Customs approval to hand over the cargo to the freight forwarder in case of Export and to the Importer incase of Imports. The customs bonded warehouse is a customs notified area and the cargo while in bonded warehouse is under the Customs Charge. Normally bonded warehouses are available and operated by Customs Departments at the Airports and Seaports. In case of larger airports and Shipping yards, the Government set up a separate corporation or agency to setup and operates such bonded warehouse. In many cases Governments do give licenses to the Customs Clearing Agents to setup bonded warehouses for exports wherein the cargo can be offloaded by the exporter, customs formalities completed and after customs approval the cargo can be stuffed into the Shipping container.

Generally if the export cargo is of smaller lots, the clearing agents move the cargo to these bonded warehouses. If the export is of one full container volume, then the cargo is stuffed into the container at the exporter's premise itself and the container is deposited at the shipping yard in the customs bonded warehouse or designated area waiting for export clearance.

An imported consignment can be imported and warehoused in Customs bonded warehouse for certain period of time in bond. This gives the flexibility to the importer to custom clear the consignment in parts when required for consumption and pay customs duty only for the consignment that is being de bonded. They can further sell the materials to third party while in bond and it would be considered as high sea sale. Until the importer files bill of entry for home consumption and pays customs duty to take delivery of the consignment, the import consignment technically is not considered to be imported and owned by the importer. Customs bonded warehouses charge normal warehousing rental and other transaction charges for the goods warehoused. Additionally beyond a certain free period ascertained by Customs in advance, the importer may be charge a certain interest on the customs duty payable on the said import, depending upon case to case basis.

4.11.2 Clearing and Distribution to Units

Any Importer wishing to bring in cargo into the country may do so through air, ship, and road or multi modal transport. Every import consignment is required to be deposited by the transportation agency or the freight forwarder into the Customs Designated Bonded warehouse for Customs Clearance.

Distribution networks in the retail business consist of a network of outlets, distribution centers and warehouses. Regional warehouses are fed by a national distribution center, and the regional centers feed the regional outlets, and these feed the distribution chains at the local level. By thinking of each level in the distribution network as a level in a bill of materials, orders placed by the service centers will generate gross requirements at the different levels in the network, form local to regional and finally national. This structure is captured in the DRP for determining material requirement and capacity planning.

Distribution Resource Planning (DPR II)

Just as Manufacturing Resources Planning (MRP II) expands the role of MRP to generating requirements for personnel, capital, and so forth, DPR II expands the role of DRP. DPR II, just like its counterpart MRP II, generates requirements for warehouse space, workers, vehicles, and capital, etc.

4.11.3 Security and Insurance

The borrower shall be at liberty to provide security to the lender / suppliers, provided that:

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(a) Where the security is in form of immovable property in India or shares of a company in India, it shall be subject to Regulation 8 of Notification No. FEMA.21/2000-RB dated May 3, 2000 and Regulation 3 of Notification No. FEMA.20/2000-RB dated May 3,2000, respectively.

(b) Guarantee Banks, financial institutions and Non-Banking Finance Companies shall not provide (issue) guarantee or Letter of Comfort or Standby Letter of Credit in favour of overseas lender on behalf of their constituents for their borrowings in foreign exchange.

Insurance started with the 'slip' that was used to be issued by the broker which was nothing except ordinary slip of paper where the insurer's broker (or very occasionally the assured himself) used to write down the essentials of the risk in selection form, the terms and conditions of the insurance which sometimes was so much abbreviated that it was hardly intelligible to those people who were outside the business of insurance. The 'slip' was submitted to the underwriter and if he was willing to accept the entire risk, he initialed it without any endorsement. However, if the underwriter accepted only a portion of the risk, he inserted even the amount before his initials which was a token of his willingness to take the "risk" up to that monetary limit. As the time passed, the practice of 'slip' became sophisticated but even during present time it is converted into a percentage either of the total insured value or of the order being placed by the broker. Although the contract is deemed to be concluded when the proposal is accepted on the basis of 'slip', the policy embodying the contract was usually prepared and signed by the underwriter subsequently. In legal proceedings, the slip could be submitted as evidence of insurance to show the intention of the two parties i.e. assured and underwriter. Though the slip was not a valid contract of marine insurance and could not be enforced as a contract to issue the policy yet it could be produced as evidence of the intention of the parties.

Open 'slip', on the other hand, was an agreement entered into by underwriter to insure any interest up to certain monetary-limit under the circumstances where the shipping arrangements were not known. For example, an exporter might purchase a quantity of rice from Sri Lanka which is to be shipped from Sri Lanka to Mauritius but without knowing by which ship it might eventually be transported.

In such cases, the broker might prepare the necessary 'slip' and the underwriter on accepting the risk would agree either at a fixed premium or at rates of premium to be fixed subsequently to insure the rice up to the amount specified by such a ship which may later on be engaged for transportation. As per the old provisions of the Stamp Act, 1891 of U.K., the 'cover note', 'open cover' or 'slip' should not be stamped as a policy but subsequently, by the Finance Act, 1959 of U.K. it became practice for the reasons of efficiency and economy to convert the slip into 'insurance policy'.

In India the legislation on the subject of Marine Insurance is being governed by the Marine Insurance Act, 1963. Act no. 11 of 1963 [18th April, 1963]. Under section 3 of this Act, contract of marine insurance has been defined as "an agreement whereby the insurer undertakes to indemnify the assured, in the manner and to the

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extent thereby agreed, against marine losses, that is to say, the losses incidental to marine adventure".

4.12 MULTIMODAL TRANSPORT

Multimode Transport means transport of cargo from premises of shipper to those of consignee by more than one mode, under single contract evidence by a single transaction and through freight rate of liability. Thus this is the transport of merchandise using two or more means of transportation from the location designated by the exporter to the location of the importer, where the carrier is responsible for taking custody of the merchandise.

The most outstanding contribution of containerization is the suitability and capability of containers for door-to-door transportation, internationally. The consignment moves through different modes of transport-rail, road, ship, inland waterways or sometimes by air also. This is called "Multi modal Transport" or "Intermodal Transport".

Multimodal transport, which provides the opportunity to manage the transport chain more effectively through the integration of all modes of transport under a single transport document, is helping countries respond to this growing demand for just-in-time door-to-door services. Aided by the revolution in information technology, multimodal transport operators in North America, Europe and a few other countries have applied the principles of logistics to manage the flow of products and information along the supply chain. Multimode Transport means transport of cargo from premises of shipper to those of consignee by more than one mode, under single contract evidence by a single transaction and through freight rate of liability. Thus this is the transport of merchandise using two or more means of transportation from the location designated by the exporter to the location of the importer, where the carrier is responsible for taking custody of the merchandise.

Whether seen from a legal point of view or from an operational perspective, Multimodal Transport is generally considered as the most efficient way of handling an international door to door transport operation. This is so because Multimodal Transport allows combining in one voyage the specific advantages of each mode, such as the flexibility of road haulage, the larger capacity of railways and the lower costs of water transport in the best possible fashion.

Example: SICAL logistics is India's leading provider of integrated multimodal solutions for the logistics of bulk and container cargo, Sical is the single windows for businesses that seek a seamless supply chain across rail, road, port and sea.

4.12.1 Features of Multimodal Transport System

Goods mainly in International Trade pass through the hands of more than one carrier and more than one mode of transport. Under conventional system of segmented transport, the consignee enters into separate contracts with each other. The liability

of each carrier is limited to the carrier in limited to the carriage performed by him.

The consignor or his agent has to attend to all arrangements required for transshipment of goods from one mode to another, including warehousing. Thus in a nutshell, the advantages can be listed as follows:

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1. No intermediate handling at terminal (port) trans-shipment points.
2. The absence of intermediate handling plus quick transits permits less risk of cargo damage and pilferage.
3. Low risk of cargo damage and pilferage enables more favorable cargo premiums to be obtained compared with conventional cargo shipments.
4. Elimination of intermediate handling at terminal transfer points i.e. ports enables substantial labour savings to be realised.
5. Less packing needs for containerized shipments.
6. Cargo arrives in better condition.
7. Rates are likely to remain more competitive when compared with conventional tonnage.
8. Transits are much quicker by combination of faster vessels, the rationalisation of ports of call and substantially quicker cargo handling.
9. Encourages trade development and provides quicker payment of export invoices.
10. Permitted fleet rationalisation.
11. Container vessels attain much improved utilisation and are generally more productive.
12. Faster transits encourage many importers to hold reduced stocks/spares.
13. Stimulates trade expansion through much improved service standards.
14. Provision of through documentation. Provision of through rate.
15. More reliable transits.
16. Emergence of new markets.
17. Overall total quality service.

4.12.2 Different Types of Operator

Sea/Air

Economy of Sea Transport and speed of Air transport can be achieved.

Mainly for east or European route.

Mainly used for high value goods like electronic, computer and high seasonal goods like fashion wear.

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Air/Road (Truck)

Though road transport in incidental to air transport i.e. pick up delivery. Also used across national boundaries to connect with main bases of Airport.

Rail/Road/Inland-Waterways-Sea-Rail/Road/Inland Waterways

Inland mode of transport such as road rail waterways to reach seaport in country of origin or from the seaport of Country of destination to inland destination.

Two international intermodal options are miniland bridge (mini-bridge) and micro-bridge.

Mini-Bridge

Mini-bridge is a variant of land bridge in which freight movements originates or terminates at a point, which has a port within United States.

Macro-Bridge

Terminates at an inland point rather than a port, otherwise same as mini-bridge.

Landbridge

Fit rate embrace two maritime tariff and surface transport rate.

Sea-Land-Sea.

Microbridge

Micro-bridge refers to door-to-door service available along the west coast of United States rather than traditional port-to-port.

4.12.3 United National International Convention on Multimodal Transport of Goods

"International multimodal transport" means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country. The operations of pick-up and delivery of goods carried out in the performance of a unimodal transport contract, as defined in such contract, shall not be considered as international multimodal transport. The United Nations Multimodal Convention (which has not yet, and may never enter into force] defines multimodal transport as follows: 'International multimodal transport' means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country. Multimodal transport has since evolved as a transport mode of its own, trying to carve its own laws, modeled around the container and its seamless transport. Some

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even speak of multimodals, and UNCTAD fully supported this move in the United Nations Convention on International Multimodal Transport of Goods and UNCTAD/ICC Rules for Multimodal Transport.

Due to advances in the transport technology including the advent of containers various structural changes have taken place in the international transportation of goods. Containers are increasingly being used for transportation of goods from one country to another, using more than one mode of transport and more than one carrier. Multimodal transportation of goods has become standard practice in the international trade. Overseas general cargo of India has also started moving in containers. Several container depots have been set up in the country. In order to facilitate containerized trade, container handling facilities in major Indian Ports, container railway flat wagons, inland container depots and container freight stations have been developed and are being developed.

A Working Group was set up by the Government of India to examine the prevalent situation and to recommend a law on multimodal transportation of goods for India which should clearly determine the liabilities and responsibilities of multimodal transport operators for loss of, or damage to, the goods. The Working Group formulated proposals which were substantially based on the rules framed by the International Chamber of Commerce. The Group also took note of the provisions of the United Nations Convention on Multimodal Transport of Goods, 1980. In the meanwhile Government took various measures to liberalise controls, simplify procedures, facilitate smooth flow of international trade and promotion of exports and in this context it became necessary to immediately, regulate multimodal transportation of goods by law.

On the recommendation of the Working Group the President promulgated the Multimodal Transportation of Goods Ordinance, 1992 on 16th October, 1992. To replace this Ordinance the Multimodal Transportation of Goods Bill was introduced in the Parliament. International transportation of general cargo has undergone important structural changes due to advances in the transport technology including the advent of containers. Containers are increasingly being used for transportation of goods from one country to another, using more than one mode of transport and more than one carrier. Such unbroken multimodal transportation of goods is also being done under a single transport document. Covering all the modes of transport and the multimodal transport operator remains liable and responsible to the entire cargo owner. Multimodal transportation of goods has become a standard practice in the trade between developed countries and the same is now gradually spreading to developing countries also.

The concept of international multimodal transport covers the door-to-door movement of goods under the responsibility of a single transport operator. Although the concept might not be new, it developed with the container revolution. The emergence of the container technology and of the multimodal transport concept came from and facilitated growing international trade. Trade and transport are

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inextricably linked: efficient transport services are a prerequisite to successful trading. International transport generally implies the use of various transport links (interfaces and modes), each link corresponding to a transfer, storage or transport operation either in the country of origin, in a transit country, or in the country of final destination. This situation has created a number of problems over the years, as more and more shippers are realizing that this new concept is involving the effective participation of various transport mode operators but does not always make clear who is responsible for delivering cargo at destination in safe conditions, according to agreed schedules.

Considering the variety of cultures, languages and commercial practices at both ends of a trade, and the resulting complexity of assembling such an international transport operation, it would appear reasonable to a trader to let one qualified operator organize and be responsible and accountable for the entire transport chain. Beginning from the present unimodal transport conditions and legal environment, transport operators have developed transport systems to fulfill customers' requirements, offering competitive services and thereby making trade more efficient by offering multimodal transport services to their clients. Since the introduction of containerization and the later development of EDI, international trade has increasingly demanded efficient commercial transactions. To take advantage of the potential offered by the new technologies, the international trading community updated its uniform commercial practices regarding trading terms, letters of credit, and multimodal transport documents. Multimodal transport implies the safe and efficient movement of goods, where the MTO accepts the corresponding responsibility from door-to-door. With technological development of transport means and operations, as well as in communications, coupled with liberalization in the provision of services, more and more transport operators are able to provide such safe and efficient transport.

4.13 TERMINAL NETWORKS: TYPES AND ROLES

Multimodal transport, which provides the opportunity to manage the transport chain more effectively through the integration of all modes of transport under a single transport document, is helping countries respond to this growing demand for just-in-time door-to-door services. Aided by the revolution in information technology, multimodal transport operators in North America, Europe and a few other countries have applied the principles of logistics to manage the flow of products and information along the supply chain. Multimode Transport means transport of cargo from premises of shipper to those of consignee by more than one mode, under single contract evidence by a single transaction and through freight rate of liability. Thus this is the transport of merchandise using two or more means of transportation from the location designated by the exporter to the location of the importer, where the carrier is responsible for taking custody of the merchandise.

Whether seen from a legal point of view or from an operational perspective, Multimodal Transport is generally considered as the most efficient way of handling an international door to door transport operation. This is so because Multimodal Transport allows combining in one voyage the specific advantages of each mode, such as the flexibility of road haulage, the larger capacity of railways and the lower costs of water transport in the best possible fashion.

Example: SICAL logistics is India's leading provider of integrated multimodal solutions for the logistics of bulk and container cargo, SICAL is the single windows for businesses that seek a seamless supply chain across rail, road, port and sea.

4.13.1 The Role of Terminal Networks in Multimodal Transport

When you create a multimodal transport network creation of new types of terminals with new features and upgrading old ones has the greatest value. In accordance with various types of cargo in multimodal transport difference manifests itself in levels in aquatic and terrestrial systems. When you create terminals a kind of cargo is taken into account which will serve the terminal network, its organizational structure, functions and place in the transport network. The main characteristics of terminals to a large extent depend on factors such as the increasing influence of shippers in the field of multimodal transport, market liberalization and transcend national boundaries.

Since the factor of management in the international multimodal transport is a crucial factor, the role of terminal services is increasing. The number of private terminals is growing too. Currently, in Western Europe, there is European terminal network, in particular:

- Inter container terminal network.
- Terminal networks of two or three countries.
- National terminal network.
- Terminal networks for multi-and bimodal transport owned to private transport companies.
- Terminals are combined in a network of different types, where the position of a single terminal can be feeder, block, block-angular, and multi block.
- All services offered at individual terminals and logistics centers, can be divided into five functional types, which are used in determining the specialization of terminals.

The functions of terminals by types the following:

- Reloading services.
- Service packages (rental, leasing, warehousing, repair).
- Service vehicles (rental, leasing, parking, repairs, maintenance, cleaning).
- Service network (initial-final operation, customs, tracking system).
- Service related to cargo (loading, unloading, provision stores).

Trends in the development of terminals and multimodal transport organizations will be in the future in the fact that:

- Work of terminal networks will increasingly be concentrated in the hands of independent regional transport companies.
- There will be a complication of the structural members of the multimodal transport.
- The number of bilateral and multilateral companies (joint ventures) in the field of multimodal transport will increase.
- National companies will come to the external market for the management of the entire chain of transport.
- The importance of operators in multimodal transport will increase.
- However development of terminals can also have negative consequences, such as part time to load, the excessive complexity of transportation, technical and organizational incompatibility in international traffic, reducing the quality of services. The new concept of terminal networks offers a transition from an isolated multi-modal cargo terminal to a single distribution center, where the terminal will be the main element. The presence of the center, acting as a liaison between producers and consumers, is a testament to the further integration of transport and areas of production and consumption.

In the distribution center there are such operations as sorting, selection, assembly, integration, separation, packaging, warehousing, storage, cargo handling, packaging, containerization, delivery and transportation of cargo. Each center is characterized by a terminal capacity (volume), specific location, and consequently, its own economic interests of the area defined by the logistic line, which marks created and implemented products. Each of them is the center of the transfer of goods, information flows, traffic flows, flows of cargo handling, ranging from a single (piece) of the product to containers.

Each distribution center terminal network is linked with hundreds of manufacturers, product line which is measured by thousands of titles. The level of automation of operations is made with the latest developments in science, engineering and technology. All information about companies, customers, orders, products, dates, vehicles entered into the computer.

Check Your Progress

Fill in the blanks:

5. ... ... can be defined as selecting and withdrawing goods or components from a store or warehouse to meet production requirements or to satisfy customer orders.
6. .... credit means any loan or advance granted or any other credit provided by a bank to an exporter for financing.
7. .... Export Credit means any loan or advance granted or any other credit provided by an institution to an exporter of goods/ services from India.
8. ... ... controls were the principal means of regulating imports and protecting local industries.
9. The .... consist of basic customs duties, mostly ad valorem, applied to the c.i.f. price of the import.
10. .... is a document on which clearance of imported goods is effected.

4.14 SUMMARY

- Exports mean selling the home country's goods/services in a foreign country. If goods made in India are sold in France, then those goods are exported to France. Imports are just the opposite of exports.
- There are many forces driving firms to enter the international arena. These forces serve as both motivators and facilitators. The decline in economic growth in industrialized countries occurred at about the same time manufacturing and logistics productivity began to increase as a result of new technology deployment.

NOTES

- The national perspective considers all international activity as importing and exporting. The operating challenges faced by global logistics systems vary significantly within operating regions.
- Exporting is the most traditional and safe way of entering into a foreign market. It involves marketing of goods produced in the domestic country in another country. In India, the Commerce Ministry through the Director General of Foreign Trade (DGFT) governs exports and imports.
- Picking processes have become an important part of the supply chain process. Right now, hundreds of thousands of pick-to-light modules are illuminating in distribution centers across the globe, directing order fulfillment operators to their next correct pick.
- In addition to obtaining competitive freight rates and services, a shipper should ensure that the product will arrive in excellent condition. Of particular concern are products of a perishable nature, such as frozen and chilled foods as well as processed and packaged foods, drinks and juices.
- Customs Act provides for levy and collection of customs duty and prescribes procedures for import and export of goods. The main objective of this Act was to consolidate and amend the law relating to Customs in India.
- Various documents are prepared and submitted for smooth movement of goods from one country to another country. Export documentation is commonly considered to be the most complex and difficult part of overseas marketing.
- A distribution method whereby containers or cargo are transferred from one vessel to another to reach their final destination, compared to a direct service from the load port of origin to the discharge port of destination.
- Technology and third-party providers can help streamline the importing process and speed cycle time while complying with increased regulatory requirements. India's import regime had two major kinds of protective barriers: (i) Non-tariff controls and (ii) Tariffs.
- Bonded Warehouse is a secured Customs approved facility where cargo and containers are stored under close surveillance. Bonded warehouses are warehouses in which dutiable goods may be stored without paying the duties on such goods.
- Multimode Transport means transport of cargo from premises of shipper to those of consignee by more than one mode, under single contract evidence by a single transaction and through freight rate of liability.
- In the distribution center there are such operations as sorting, selection, assembly, integration, separation, packaging, warehousing, storage, cargo handling, packaging, containerization, delivery and transportation of cargo.

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4.15 KEY TERMS

- **Free On Board (FOB):** Free On Board means that the exporter fulfils his obligation to deliver when the goods have passed over the ship's rail at the named port of shipment.
- **Order picking:** Order picking can be defined as selecting and withdrawing goods or components from a store or warehouse to meet production requirements or to satisfy customer orders.
- **Pre-shipment credit:** It means any loan or advance granted or any other credit provided by a bank to an exporter for financing.
- **Post-shipment Export Credit:** It means any loan or advance granted or any other credit provided by an institution to an exporter of goods/services from India.
- **Non-Tariff Controls:** Non-tariff controls were the principal means of regulating imports and protecting local industries.
- **Tariffs:** The tariffs consist of basic customs duties, mostly ad valorem, applied to the c.i.f. price of the import.
- **Bill of Entry:** It is a document on which clearance of imported goods is effected.
- **Bonded Warehouse:** Bonded Warehouse is a secured Customs approved facility where cargo and containers are stored under close surveillance.
- **Multimode Transport:** Multimode Transport means transport of cargo from premises of shipper to those of consignee by more than one mode, under single contract evidence by a single transaction and through freight rate of liability.
- **NAFTA:** North American Free Trade Agreement
- **DGFT:** Director General of Foreign Trade
- **LCL:** Less than Container Load
- **FCL:** Full Container Load
- **CHA:** Custom House Agent's
- **ICD:** Inland Container Depot
- **CFS:** Container Freight Station
- **THC:** Terminal Handling Charges.

4.16 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Exports mean selling the home country's goods/services in a foreign country. If goods made in India are sold in France, then those goods are exported to France.

2. Imports are just the opposite of exports. Here, goods/services are purchased and brought in from another country. This means that if we use goods made in France in India, then such goods are imported from France.
3. GATT (General Agreement on Tariffs and Trade) is a multilateral trade mechanism for improving trade relations among signatory trading partners. It is designed to increase trade consistency, improve trade relations, and reduce bilateral agreements.
4. The four stages of economic integration are free trade agreement, customs union, common market, and economic union.
5. Order picking
6. Pre-shipment
7. Post-shipment
8. Non-tariff
9. Tariffs
10. Bill of Entry

4.17 QUESTIONS AND EXERCISES

Short Answer Questions

1. Write short note on logistics in a global economy. What barriers are in the way of global logistics? What is the importance of global logistics?
2. Discuss Customs Act, 1962.
3. Explain pre-shipment export credit and post-shipment export credit.
4. What is Non-vessel Operating Common Carrier (NVOCC)?
5. Explain import logistics.
6. What is bonded warehousing?
7. What is the role of terminal networks in multimodal transport?

Long Answer Questions

1. Briefly explain the special aspects of EXIM logistics.
2. Briefly explain the picking and packaging process.
3. "Various documents are prepared and submitted for smooth movement of goods from one country to another country". Explain.
4. Provide insight into delivery to distribution centers.
5. What is the procedure for clearance of imported goods
6. Explain multimodal transport. What are the features of multimodal transport system? Also explain the different types of operator.

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UNIT 5 LOGISTICS SERVICE PROVIDERS

Structure

5.0 INTRODUCTION

Case Let: FedEx: Third Party Logistics Provider

"FedEx is a supply chain company. We are very cognizant of trying to make our customers' supply chain more efficient. But, at the same time, we became very focused on our internal supply chain."

— **Edith Kelly-Green,**
Vice President and Chief Sourcing Officer, FedEx Corporation.

"FedEx's Supply Chain Services represents the best of the best and the organization has set an example ... for other companies to follow."

— **Bo Anderson,**
Executive in Charge of Worldwide Purchasing, GM.






In August 2002, Logistics Management rated FSCS as the best third party logistics provider in the US. FedEx started offering SCM services to its

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customers on a very small scale in 1974. With increasing demand for services such as inventory and warehouse management, in 1989 FedEx established FedEx Logistics Services, a group company specifically focusing on managing the supply chain of corporate customers. Soon, FedEx started building upon its technology intensive SCM service offerings. By offering world-class SCM services and solving the customers' supply chain problems by customizing its SCM solution according to their specific requirements, FedEx earned significant appreciation from all customers.

The service involved FedEx solving the warehousing problems of small companies by facilitating overnight shipping of their manufacturing related parts.

For this purpose, FedEx constructed a small warehouse at a corner of its Memphis sorting facility. This was FedEx's initial effort to provide multi-client warehousing services.

FedEx offered a wide range of supply chain management services to its customers. This included general services such as order fulfillment and transportation and unique ones such as customs clearance and returns management program. FedEx customized its supply chain services according to the requirements of corporate customers as well as the industry in which its customers operated.

Source: *http://www.icmrindia.org*

In the previous unit, we dealt with the concept of global logistics, export logistics — special aspects of EXIM logistics, picking, customs act. The unit also discussed about the documentation, shipment, delivery to distribution centers, distributors and lastly the retail outlets, import logistics, bonded warehousing, multimode transport, and terminal networks: types and roles.

This unit will also help you to understand about 3PL/4PL services, carrier management, and supply chain engineering and 4PL value added services: knowledge transfer. To make the learning easier, we will take the help of globally recognized best practices.

Logistics is significant to the success of every organization. Once considered an important, behind-the-scenes operational activity, logistics is now recognized as a strategic instrument for creating customer value and loyalty. Companies like Walmart, Coca Cola, and Nike attribute a great deal of their success to their global logistics systems. They understand that integrating activities within the organization and across the logistics pipeline, building strong relationships with product suppliers, and working with customer-focused logistics service providers are all significant to building a competitive advantage through logistics.

The reach of opportunities for logistics professionals is expanding. Logistics managers are involved in boundary and organization-spanning teams, strategic

planning, alliance building, and a multitude of other activities that directly impact the success of their organizations worldwide. The excitement and newness of logistics stem from a combination of conventional work areas into an integrated strategic initiative. Thus contract services plays vital role in logistics decision as there is need for:

- Rapid Response
- Minimum Variance
- Minimum Inventory
- Consolidated Movement
- Improvement in Quality
- Life-cycle Support

In case of logistical system design and administration, the firm must simultaneously achieve at least six different operational objectives. These operational objectives, which are the primary determinants of logistical performance, should include rapid response, minimum variance, minimum inventory, movement consolidation, quality, and life-cycle support.

The significance of service support logistics changes directly with the product and buyer. This applies especially to firms marketing consumer durables or industrial equipment. The commitment to life-cycle support comprises a demanding operational requirement as well as one of the largest costs of logistical operations. The life-cycle support capabilities of a logistical system must be cautiously designed. Reverse logistical competency, as a result of worldwide attention to environmental concerns, requires the capacity to recycle constituents and packaging materials.

5.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Learn about 3PL/4PL services
- Understand carrier management
- Discuss product/skill centers and supply chain engineering
- Explain 4PL value added services and knowledge transfer.

5.2 3PL/4PL SERVICES

Outsourcing is a viable option for companies. Businesses outsource for many and varied reasons-increase shareholder value, reduce costs, business transformation, improve operations, overcome lack of internal capabilities, keep up with competitors, gain competitive advantage, improve capabilities, increase sales, improve service, reduce inventory, increase inventory velocity and turns, mitigate capital investment, improve cash flow, turn fixed costs into variable costs and other benefits, both tangible

and intangible. To the maximum, and if done correctly, outsourcing and business process outsourcing can be used to create a viable virtual corporation.

3PLs have led the way in logistics outsourcing. Drawing on its core business, whether it be forwarding, trucking or warehousing, they moved into providing other services for customers. Creation of a 3PL presented a way for a commodity-service logistics provider to move into higher margin, bundled services.

Customers, anxious to reduce costs, want what 3PLs have to offer. The potential market opportunity for outsourced logistics service providers, whether domestic, international and/or global is huge.

But something has happened on the yellow-brick road. The reasons are varied, but the bottom line is many have failed at their own business transformation. Some 3PLs have not moved past their core commodity service to become true multi-service providers. Or international 3PLs have not understood how to provide domestic services; or domestic ones have not succeeded at venturing into international logistics services.

Others have failed to differentiate themselves against the competition. Certain 3PLs have not done a good job positioning and defining themselves in the marketplace. Or the parent company has not given them the resources, especially sales and sales leads, to penetrate even their existing customers. And, sundry have commoditized their 3PL service, as a result undoing the very purpose of their 3PL. These setbacks have slowed down the growth of some 3PLs in terms of both customer retention, especially, and new customers. Fragmentation of the 3PL sector reflects both the uncertainty of how 3PLs view themselves and the diversity of customer needs.

As a result, customers have had to compare apples and oranges in their RFP replies. Shippers share some accountability with an overemphasis on cost reduction as the key metric and without a clear definition of their requirements for services they need and how it will all work within their company. They looked for silver bullets and quick answers to complex needs.

Into the service vacuum created by 3PLs, the 4PL has emerged. Using a 4PL, fourth party logistics service provider, is different than the traditional 3PL. Much on 4PLs discusses technology. Technology is not the answer; it is part of the answer. It is one element of success of process, people and technology. 4PLs see the process and what is required to make it succeed.

4PL's combine process, technology and process to manage. The 4PL is a Business Process Outsourcing, BPO, and provider. This lead logistics provider will bring value and a reengineered approach to the customer's need. A 4PL is neutral and will manage the logistics process, regardless of what carriers, forwarders or warehouses are used. The 4PL can and will even manage 3PLs that a customer uses.

Business process outsourcing is traditional outsourcing and more. Outsourcing is often taking a set of work, tasks, responsibilities or functions and transferring them

to an outside service provider. Business Processing Outsourcing (BPO) involves that and more. A BPO service provider brings a different perspective, knowledge, experience and technology to the existing function and can and will work with the firm to reengineer it into an improved or new process. It is an outcome-based result, not just a pure cost reduction issue. The new process will interact or be integrated into the company in a way that can bring value, even bottom line and shareholder benefits, to the client.

A good 4PL will have the shipper perspective and experience in what he does and offers to prospective customers. That means a better understanding of the complexity of the customer's requirements, present viable solutions and to have customer satisfaction and retention.

The firm sees the relationship, not a chunk of freight. Instead the BPO provider seeks incentives and metrics to define the relationship and collaborates with each customer as to goals and outcomes. A 4PL wants to position itself as an extension of and part of its customer. This BPO provider recognizes the role of and need for information technology in managing the process.

A successful 4PL should have both the strategic and tactical capabilities. He should have real world logistics experience, especially on the "shipper"/customer side. Experience lets you see real issues and hidden agendas that are present. They also give you the ability to develop the process, people and technology that are needed because they have "been there, done that". They understand meeting the needs of their clients because they have managed and been responsible for logistics.

A 4PL, with real world supply chain experience, can present a way for customers to take control of their supply chains. They can structure the relationship and the process in a way that best meets the requirements of the customer, rather than the customer having to accept what the outsourcing provider has to offer.

When it comes to outsourcing, there are three questions and underlying issues One, do you outsource a function versus outsource a process? 3PLs target the function. They want to handle containers/shipments/freight, not the transport management process, for example. The true need is the process, which is what the 4PL targets. Is there really a process in place — or a series of standalone transactions? What is the present process? How does it work? Where does it fail? Where are there gaps? Where are there redundancies? The supply chain process crosses organizational lines. It runs horizontal in a vertical organization.

Two, do you outsource work/tasks or do you outsource managing? Much outsourcing is work related. Handle warehousing. Handle shipments. Not manage them. This matter is part of the next evolution of outsourcing and where the 3PL will have to migrate — and where the 4PL is already positioned.

Three, the outsource service provider, to truly meet the needs of his customer, should be neutral. 4PLs should be neutral if they are to manage the process. 3PLs,

especially those which are asset-based struggle to be neutral. 3PLs which seek to push shipments through their transport contracts or through their warehouses are not neutral.

Some 3PLs have not fully stepped up to meet the exact needs of customers. Some have become too focused on "managing" tasks, not processes and on serving the parent companies core business, and have missed opportunities to present value.

The 4PL opportunity exists because 3PLs failed to meet the real logistics/supply chain requirements of customers. There will not be a "model" (or cookie cutter) for the 4PL. After all, he knows to customize to the needs of each customer.

As a result, 4PLs have become alternatives for business process outsourcing. These new BPO logistics service providers enable firms to manage a critical part of their supply chain by providing visibility and integration across multiple enterprises. They manage with the three key elements of process, people and technology. Users of a 4PL can focus on core competencies and better manage and utilize company assets and resources, as to inventory and personnel.

5.2.1 Third Party Logistics Services and Providers

Third party logistics (3 PLs) is the use of an outside company to perform all or part of the company's materials management and product distribution functions. The competitive advantage for any company is to focus on their core competencies, and let the 3PL firm handle those supply chain functions in which they specialize. In order to provide truly value-added services, 3PL firms must interact with customers to understand their needs and then adjust their offerings to meet them.

It is obvious that companies can parcel out numerous supply chain processes to entities that specialize in the efficient performance of those processes. Outsourcing a wide array of supply chain processes can generate greater value across the entire supply chain because specialized firms performing the selected processes enjoy a level of expertise and leverage that would not be available to manufacturers, wholesalers or retailers.

Transportation, warehousing, order processing and fulfillment, packaging, labeling, and bill payment are some of the key processes that can be outsourced to specialist firms called third-party logistics firms, or 3PLs. If these firms are efficient and effective, then the entire supply chain can benefit from improved capacity utilization, enhanced service levels and lower costs.

3PLs can provide technological and other flexibility to client companies. For instance, channel partners may need to change their technology for implementing quicker systems. Similarly, they may have changing needs for warehousing and transportation facilities. Such changing demands can be easily taken care of by third-party logistics companies.

Customers of 3PL companies look for four dimensions of value to be derived from outsourcing a process to a 3PL firm. These values include trust, information,

capital utilization and cost control. The 3PL's customer orientation, level of specialization, asset ownership status and the price at which the service is offered form some of the main issues that a client will consider while selecting an appropriate service provider.

3PL companies must provide reliable services and solve channel problems so that smooth flow of goods and information can take place. This helps customers to trust 3PL companies.

3PLs can create value for their customers in the accuracy, quality and timeliness of the information that they provide their clients, different channel partners and to ultimate customers. This information can be electronically integrated into the customer's MIS for direct access.

3PLs can help customers reduce inventory and fixed assets, such as buildings and equipment.

This leads to better utilization and financial returns on both working and fixed capital. Although capital utilization is important to 3PL customers, reduction of supply chain costs and sharing the savings with customers is probably the most visible (though not the most important) value.

Each supply chain will have firms with different levels of expertise and 3PL must customize their services according to their clients' expectations. Firms using 3PL services are seeking performance levels where the overall net benefits exceed the amount paid to the 3PL, improving service-related benefits also produces value, particularly when combined with the reduction of logistics costs. Many CEOs now see this value as critical to business survival.

An important contribution of the 3PL is providing the leverage that its customers cannot generate by themselves via the provision of information, cost reduction activities, service enhancements, or better asset utilization. In addition, by becoming more integrated into its customer's operations, the 3PL will be able to recognize and understand changes in the logistic needs of the customers.

An important disadvantage of third party logistics for companies is the loss of control faced by the company due to out sourcing a particular function. Engaging reliable 3PL service providers can offset this problem. Moreover, 3PL companies can assure their clients of their reliability by integrating their activities seamlessly with latter's operations. Painting clients' logos on transport vehicles etc. can signify close integration between the client and the 3PL service provider.

All channel partners must be successful if meaningful and lasting value is to be achieved. This requires open communication and collaboration. If any element in this supply chain relationship is neglected, the chain is broken and the value is lost.

5.2.2 Fourth Party Logistics

The term "fourth-party logistics provider" is a trademarked term owned by Andersen Consulting. It refers to the evolution in logistics from suppliers focused

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on warehousing and transportation (third-party logistics providers) to suppliers offering a more integrated and value added solution. Among other services, fourth-party logistics providers include supply chain management and solutions, change management capabilities, and value added services as part of their offering. A 4PL company delivers a comprehensive supply chain solution and adds value by influencing the entire supply chain.

A 4PL leverages a full range of service providers (3PLs, IT providers, contract logistics providers, call centers, etc.) along with the capabilities of the client and its supply chain partners. The 4PL acts as a single point of interface with the client organization and provides the management of multiple service providers through a teaming partnership or an alliance. A 4PL adds value to the entire supply chain, through reinvention, transformation, and execution.

Reinvention implies synchronization of supply chain planning and execution activities across all supply chain participants. This is achieved by:

- Leveraging traditional supply chain management skills
- Aligning business strategy with supply chain strategy
- Creatively redesigning and integrating the supply chains of the participants.

Transformation efforts focus on specific supply chain functions including sales and operations planning, distribution management, procurement strategy, customer support, and supply chain technology. This is done by:

- Leveraging strategic thinking and analysis
- Process redesign, organizational change management
- Technology to integrate the client's supply chain activities and processes.

Execution of the supply chain integration strategy leads to increased revenue, operating cost reduction, working capital reduction, and fixed capital reduction while traditional approaches tend to focus only on operating cost reduction and asset transfer.

Revenue growth and customer satisfaction are driven by enhanced product quality and product availability due to the elimination of stock-outs and 'ship-complete'. Dramatic customer service improvements can be attained as the 4PL focuses on the entire supply chain and is not limited to increasing efficiencies associated with warehousing and lowest-cost transportation. Operating-cost reductions are driven through operational efficiencies, process enhancements and procurement savings. Savings are achieved through the complete outsourcing of the supply chain function instead of only a few components as in the case of a 3PL solution. Savings are also achieved due to the economies of scale that accrue due to the large size of the operations involved in the entire service chain.

Synchronization of supply chain activities by channel partners leads to operating-cost reductions and a lower cost of goods sold, due to integration of processes, and improved planning and execution of supply chain activities.

Technology is proactively used to manage order and inventory movement

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throughout the pipeline, thereby minimizing the amount of inventory required, and increases item availability to reduce cycle times. Thus, working-capital reductions can be realized through inventory reductions and reduced "order to cash" cycle times. Fixed-capital reductions result from capital asset transfer and enhanced asset utilization. 4PL's can undertake the ownership of physical assets, thus freeing up assets held by various companies that form part of the supply chain. This allows the client organization to invest in its core competencies like research and design, product development, marketing and sales, etc.

A 4PL can use any of the three operating models to deliver supply chain solutions.

- A partnership can be forged between the 4PL organization and a third-party service provider to market supply-chain solutions that capitalize on the capabilities and market reach of both organizations. The 4PL provides a broad range of services to the 3PL including technology, supply chain strategy skills, capability to go to market, and program management expertise.
- The 4PL can operate and manage a comprehensive supply chain solution for a single client. This arrangement encompasses the resources, capabilities, and technology of the 4PL and complementary service providers to provide a comprehensive integrated supply chain solution that delivers value throughout a single client organization's supply chain components.
- As a supply chain innovator, a 4PL organization can develop and run a supply chain solution for multiple industry players with a focus on synchronization and collaboration. The formation of industry solutions provides the greatest benefits; however, this model is complex and can challenge even the most competent organizations.

The 4PL service provider needs to possess a comprehensive set of skills to effectively deliver an integrated supply chain solution. These include:

- Availability of a large body of trained supply chain professionals, global capabilities, reach and resources.
- Ability to manage multiple service providers.
- Ability to transition clients' employees and other assets smoothly to the new 4PL environment.
- Strong relationship and teaming skills.
- Delivery of world-class supply chain strategy formulation and business process redesign.
- Strength in integrating supply chain technologies and outsourcing capabilities.
- Understanding of organizational change issues.

Fourth Party Logistics is the next generation of supply chain outsourcing. Supply chain activities are information-rich, complex and increasingly global. At

the same time, technology and e-enabled capabilities are racing ahead. To enable a firm to capture all the benefits of supply chain collaboration and synchronization, a new generation of integration must be deployed, which is currently beyond the capabilities of traditional outsourcing methods.

5.2.3 Differences between 3PL & 4PL

Third Party Logistics Provider (3PL) is defined as "The services offered by a middleman in the Logistics Channel that has specialized in providing, by contract, for a given period, all or a considerable number of the logistics activities for other firms." A middleman could be a broker, a freight forwarder, Shippers' Association etc. They carry out outsourced logistics activities. They can handle process management/ multiple activities. They provide more customized services. They believe in mutually beneficial and risk-sharing relationship. Typically, such contracts need long-term commitments (1~ 3 years).

The Fourth Party Logistics Provider (4PL) is a new-fangled concept in Outsourcing. A 4PL forms an alliance between multiple 3PL service providers, technology providers and management consultants. A 4PL provider is a Supply Chain integrator who assembles and manages the resources, capabilities and technology of its own organization with those of complementary service providers.

3PL providers provide logistics services with their own assets. For example, a distribution service provider which uses its own resources, e.g. workers, to pack final products for distributing to different markets as per customer's request is seen as a 3PL provider.

4PL providers provide broader logistics/supply chain services. They assemble the resources, capabilities and technology of their own organizations (i.e. their resources) and other organizations (e.g. through agreements) to design, build up and run more comprehensive supply chains. One can interpret that 4PL:

- deal with business process and linkages as well as individual activities
- not all of the services provided by 4PL providers are owned by themselves.

3PL/4PL supply chain management is a growing trend as an alternative to traditional outsourcing. It is service-intensive supply chain and is more complex than the typical finished-goods supply chain. It requires larger inventories and tighter integration with field service and third/fourth parties. They must also accommodate inconsistent and uncertain demand by establishing more advanced information and product flows. Moreover, all processes must be coordinated across numerous service locations with large numbers of parts and multiple levels in the supply chain.

4PL Specialties

The term "4PL" was actually coined by the consulting group Accenture. In fact, they also hold the trademark to the name 4PL. Accenture defines a 4PL in the following manner: "A 4PL is an integrator that assembles the resources, capabilities, and technology of its own organization and other organizations to design build and run comprehensive supply chain solutions."

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The term 4PL is something that every organization has their own interpretation of and ideas on what exactly a 4PL should offer. To add more complexity to the interpretation, the following groups of service providers actually provide "4PL type" services:

- Consultants
- IT Service Providers
- "E" Marketplaces
- Financial institutions
- Private Organizations
- Logistics Service Providers (traditionally only known for 3PL activities)

5.2.4 Common Services for 3PL/4PL — Invoice management, call centers, warehouse/distribution facilities

A true 4PL organization would then build a set of activities focused around a specific set of supply chain initiatives and goals, generally with the following attributes:

- ***4PL Common Services (invoice management, call centers, warehouse/ distribution facilities, etc.***
- Implementation Center (the business process analysis/scoping, and development of all activities into an open systems framework)
- Product/Skill Centers (supply chain engineering)
- IT System Center (the pure IT selection for design and implementation/ connectivity)
- 4PL Back Office (administration, quality, finance, legal, etc.)

Sitting above these functions would be a Controlling Interface, monitored by the hired 4PL party. This group would manage all the "blocking and tackling issues" related to daily business. The Controlling Interface would provide the customer-facing visibility, control, KPI/Metrics management, reporting, daily problem solving, etc.

Additionally, surrounding these activity sets would be the following:

- Knowledge Transfer
- Business Development
- Functional Support

So, to give you a visual field, picture a dartboard. From the center outward, there would be a series of concentric circles. In the center would be the 4PL. The next outer circle would be the strategic partners. The next outer circle would be the preferred service providers, following by the larges outward circle which covers the project partners.

The Business Ethics of a 4PL would contain the following ethos:

- The 4PL organization focuses on the customer supply chain
- All 4PL organization decisions are made towards managing the myriad of service providers, which are based on business rules.
- All service providers are measured on a master single set of KPI's.

5.3 CARRIER MANAGEMENT

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An intermediary can be a transport facilitator as a third party in providing linkages between shippers and carriers. Transport operators include road operators, rail operators, inland waterway operators, and ocean container carriers. Transport cost is important for carrier selection. Other service factors to consider include transit time and reliability, inventory and stockout, capability and accessibility, and security. The shipping supply function shows the quantity of shipping services by sea transport carriers that would be offered at each level of the freight rate, whereas the shipping demand function shows how shippers adjust their demand requirements to changes in freight rates. In the shipping market, the supply and demand curves intersect at the equilibrium price, where both carriers and shippers have reached a mutually acceptable freight rate.

Container Transport

Container transport involves intermodal door-to-door services comprising oceangoing services, as well as land-based transport services through trucks, rail, and/or barges to move containers in an end-to-end shipping linkage pattern. In view of shippers' rising expectations for logistics services, developing capabilities to provide door-to-door services and efficient movements between several points of origin and destination have become a strategic imperative for many container transport carriers.

As most containers for international transport pass through one or more container ports, it becomes difficult for transport carriers to control data exchange along the container transport chain. Effective transport of containers is dependent on responsive and reliable information exchange among actors in the container transport processes. Coordination among transport carriers and related parties such as port and terminal operators is necessary to ensure effective information flow in the container transport chain.

Ocean Container Carriers

Ocean container carriers are the most visible link for international movement of containers, as most container moves include at least one sea leg. There are 457 carriers operating vessels, and the majority of them are fully cellular ships. The world's container vessel fleet is dominated by the presence of large carriers that operate high-capacity vessels on major trade routes such as the trans-Pacific, Asia–Europe, and trans-Atlantic routes. The top 20 operators account for 61% of the total capacity, and the top 40 operators account for 72% of the total capacity.

Inland Waterway Operators

Inland waterways suitable for transporting goods can take the form of a natural river, an artificial man-made canal, or an area of water that is closely connected to

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the shore. Water carriers are the oldest mode of transport, and have facilitated the development of many established cities. The water carrier system is a viable part of the transport system, which competes with other inland transport modes such as roads and railways. Inland waterway carriers often offer all-in-one packages such as carriage from a seaport to a container inland depot and return of empty containers.

Carrier Obligation and Liability

The Pomerene Act obligates a carrier to deliver the goods covered by a non-negotiable bill of lading on demand of the consignee named in the bill. With respect to a negotiable bill, the Act provides that the goods should be delivered to the person in possession of the bill of lading. A common carrier is liable for mis-delivery if it delivers the goods to a person not entitled to possession.

A common carrier may also be liable for issuing a bill of lading for goods it has not received or for mis-descriptions contained in the bill of lading. However, a carrier is not liable under this provision when the goods are loaded by the shipper and the bill describes the goods in terms of marks or labels, or in a statement about kind, quantity, or condition, or the bill is qualified by words "said to contain" or "shipper's weight, load, and count," or other words that indicate that the carrier is relying on the shipper's representations to the extent that the carrier has no independent knowledge of the goods. Likewise a carrier is not liable for improper loading if the shipper loads the goods and the bill of lading so indicates.

Where goods shipped in bulk are loaded by a shipper who makes available to a common carrier the means for weighing the goods, a request by the shipper for the carrier to make a determination of the kind and quantity of the goods precludes a carrier from subsequently qualifying the bill of lading by the insertion of such terms as "shipper's weight." In cases where goods are loaded by a common carrier, the carrier is obligated to count the packages or determine the kind and quantity of bulk cargo. In these situations the insertion by the carrier of some qualification, such as "shipper's weight, load, and count," has no legal effect except for goods concealed in packages.

Implementation Center: Business process analysis/scoping and Development of all activities into an open systems framework

As we have discussed above 4PL supply chain management is a growing trend as an alternative to traditional outsourcing. 4PL Logistics Service consulting to design, build and run comprehensive supply chain solutions including:

- Implementation Center: The business process analysis/scoping, and development of all activities into an open systems framework
- 4PL Common Services: Invoice management, call centers, warehouse/ distribution facilities and etc.
- Product/Skill Centers: supply chain engineering
- IT System Center: the pure IT selection for design and implementation/ connectivity
- 4PL Back Office: administration, quality, finance, legal, etc.

Sitting above these functions would be a Controlling Interface, monitored by the hired 4PL party. This group would manage all the "blocking & tackling issues" related to daily business. The Controlling Interface would provide the customer-facing visibility, control, KPI/Metrics management, reporting, daily problem solving, etc.

5.4 PRODUCT/SKILL CENTERS: SUPPLY CHAIN ENGINEERING

Supply Chain Engineering (SCE) describes a method for the conceptual construction and realization of logistic and product oriented supply chains within a company and beyond its borders. According to SCE the focus should not be limited to optimizing the parts of supply chain for effective and efficient functioning, but the complete value chain needs to be considered in a holistic fashion to yield the desired efficiency and effectiveness. The most essential ingredient of SCE is its integral view embodying

- Local Customization
- Engineering
- Information Technology

The engineering character is not only visible in the SCE's content but also in its name. The method of SCE moves along a classical definition of a value-adding supply chain within, from and between companies and markets. Thereby SCE creates network structures, processes and establishments along the supply chain in a certain way. Hence strategy, engineering and IT are not regarded separately but equally and integrated in all planning steps. Solutions for supply chain design that follow the SCE approach are therefore considered to be holistically and always influenced by engineering.

All measures that follow the SCE process focus the most ideal supply chain construction whilst regarding cost optimization, a correct use of engineering and IT as well as training and integration of employees in production centres and logistical facilities. For the German-speaking area this approach was mostly defined by Dr. Miebach. "Supply Chain Engineering – methods of integrated logistics planning" was published in July 2010 and is so far the only work that describes SCE as a holistic and well-defined method. Following the publishers experiences, neither the top-down approach (mostly used by strategy consultants) nor the bottom-up approach (used by most engineering offices as unique point of view) achieve satisfying results when trying to create most optimized supply chains.

The SCE approach as defined by Dr. Miebach regards itself as an upstream authority and basic principle for efficient and effective SCM. SCM—as it is defined by the Council of Supply Chain Management Professionals (CSCMP)—is a strategic-operative controlling tool for already installed supply chains. On the contrary the SCE approach addresses the basic and first creation or optimization of supply chains and integrates SCM as a subsystem to control supply chains. Joint goals such as

Check Your Progress

1. Define Third Part Logistics (3PL).
2. Explain the meaning of Fourth Party Logistics (4PL).
3. What do you know about container transport?

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coordination and integration along a supply chain regarding cross-functional business processes and a value-adding point of view — are therefore also inherent parts of a SCE goal.

5.5 4PL VALUE ADDED SERVICES: KNOWLEDGE TRANSFER

"Knowledge management" is something of a fad in today's business press. At the same time, it addresses key issues that can lead to success within organizations. Knowledge management addressed how organizations can manage the knowledge embedded in its systems, and contained in the heads of its employees. It also systematically considers how advanced information technology can be used to leverage existing knowledge and create new knowledge. This essay discusses one aspect of knowledge management, knowledge transfer: how to move good ideas from one part of an organization to others that can use the information.

The Growing Importance of Knowledge Transfer

Knowledge transfer has always been a challenge for organizations. Its importance has grown in recent decades for three related reasons. First, knowledge appears to be an increasing proportion of many organizations total assets. Second, organizations have moved away from hierarchical methods of control toward more decentralized organizational structures and increased employee involvement (Levine, 1995). This has resulted in more creativity by frontline employees and subunits, but fewer obvious organizational paths through which the transfer can occur. Finally, advances in information technology have created new means of knowledge transfer. Innovations such as Lotus Notes, the Internet, and intranets all hold the potential for increased diffusion of innovations. However, technology alone cannot solve the problem of knowledge transfer; organizational structures and practices must facilitate and motivate transfers.

Knowledge transfer is only valuable when it is integrated into a set of policies for knowledge generation and capture. In what follows, we analyze the process of knowledge transfer and outline steps that managers can take to increase information flow within their organizations.

The Components of Knowledge Transfer

In principle, knowledge transfer can be broken down into distinct stages. We've chosen five steps to describe the process: idea creation, sharing, evaluation, dissemination, and adoption. These stages often overlap, are combined, or are skipped; they also have important feedbacks.

1. **Idea creation:** A massive literature exists on how to promote creativity. Robert Sutton has studied creativity in groups and offers the following list of questions to ask when assessing a group's potential for creativity.

- Is the knowledge in the group varied enough?
- Is the group's attitude about its knowledge include respect for what it knows and searching for what it does not know?
- Does the group know how to fight so that new ideas are encouraged?
- Does the group engage in constant experimentation?
- Does the group's status order support innovation, or do a few bosses control ideas?

2. **Idea sharing:** In practice, sharing (step 2) is often combined with validation and dissemination (steps 3 & 4). For example, a work group might share its ideas in a meeting, where their merits are discussed and relevant potential adopters hear the new methods. Here, sharing refers to the need to expose others to the idea in order for it to be evaluated. Dissemination takes place once the idea has passed some minimum level of evaluation.

   For information sharing to occur, two conditions must be satisfied. First, ideas must be in a form that others in the organization can interpret. Dissemination is easier when the knowledge can be made explicit or formal. For many skills and ideas, this involves transforming the idea into a codified, often written, format. Tacit, or informal, knowledge can be shared as well but the means of sharing are different, requiring face-to-face contact and opportunities for experiential learning. Apprenticeships often follow this time-intensive and sensory-rich means of transmitting knowledge. Nonaka has emphasized the rich interactions between tacit and explicit knowledge (1994). While conventional wisdom on why knowledge is difficult to transfer within firms has focused on motivational barriers, Szulanski (1996) found that features of the knowledge itself and the receiver's inability to interpret it were two of the most important factors in inhibiting knowledge transfer.

   The second condition required for sharing to occur is that employees with ideas must be willing to share them. Sharing takes place at multiple levels, with overlapping but distinct concerns: from a worker to a workgroup, between workgroups, between departments, between business units, and between organizations. Unsurprisingly, Szulanski (1996) found that when the relationship between the source and recipient was distant or problematic, knowledge transfer was more difficult.

3. **Idea evaluation:** Far more ideas exist than good ideas. Thus, organizations must evaluate their new ideas — see whether they have worked in the past, are likely to work at new places, and actually work at new places. Employees must have the capability, incentives, and structures to perform the validation studies. At Xerox, for example, skilled technicians evaluate new ideas; the best are added into a best practices database for others to learn from.

4. **Idea dissemination:** In principles, more information is better than less. At the same time, too much information creates overload. The Internet is a classic

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example, where nobody can read even a fraction of what is there. The key to disseminating knowledge is that people receive it who can use it. Several solutions exist to targeting information, ranging from the primarily technological to the purely organizational.

5. **Idea adoption:** In the best of all worlds, if people knew the right thing to do, they would do it. However, we are not in such a world. Scholars of organizational inertia have developed complex theories of why, even after knowledge has been transmitted to the right people, it may not have been transferred to the organization. These theories fall into the categories of inadequate capability (known as "absorptive capacity" in the literature), poor incentives (the famous "not invented here" syndrome), and inadequate structures (for example, rigid operating procedures that are difficult to update).

How Management Can Promote Knowledge Transfer

Now let us discuss how managers can encourage knowledge transfer within an organization through the use of training, incentives, organizational structures, and technology. Under each section, we outline steps that will promote each of the stages of knowledge transfer outlined above.

Training

To effectively generate new ideas, employees need to be trained in problem solving, including an ability to think "outside the box." A typical program includes how to identify problems, prioritize, analyze root causes, identify possible counter-measures, implement the solution, and check whether the solution actually works. Companies must also provide people information on the business and its environment so their ideas are appropriate. In addition, employees need modern organizational skills such as how to work effectively as a team.

To share articulated or explicit knowledge, workers need to be literate in the languages in which ideas are expressed in their work. In addition to spoken and written language such as English, this may involve high-order "literacy" in more technical languages such as blue prints or statistics.

Managers and workers must be trained to evaluate new ideas. Just as importantly, they must be trained in systematically understanding what evidence should be convincing — for example, the difference between correlation and causality, and the problems of small samples. As everyone who has ever studied statistics knows (and especially everyone who has ever taught it), these basic concepts are often difficult to apply in practice. Once these basics have been mastered, formal procedures such as statistical process control and the design of experiments can be useful in creating new knowledge. Importantly, for most employees and managers, statistical and problem-solving training will usually be more effective if it is coupled with resolving an actual problem, instead of classroom training in statistics.

Training workers to both disseminate and adopt new ideas may revolve around making them aware of where else in the organization their ideas may be useful and where else ideas may arrive from. Workers must also know how to use technology to post and search for new ideas. A receiver's ability to understand an idea, "absorptive capacity", can be a barrier. This can only be resolved through increasing the worker's own knowledge base, requiring an increased emphasis on substantive ongoing education and training.

One difficulty with existing training efforts is their lack of integration. To be most effective, training on creativity should include designing solutions that include opportunities for validation and dissemination of ideas.

Incentives

To create an environment that encourages the generation of new ideas, managers should consider the following policies: incentive pay for ideas generated by groups or individuals; no layoffs for productivity improvements that follow from new ideas; job duties that include tinkering; permitting or encouraging experiments that are well-conceived but fail; and giving credit to employees who generate new ideas.

Employees are most likely to spend energy sharing what they know if they are in a single workplace with group incentives. Thus, extra incentives can be helpful when employees are in different units without common objectives. Both monetary rewards and recognition can prompt people to be more open with information and can create corporate cultures in which sharing of information is valued.

For example, at Buckman Laboratories everyone sees who answers problems on the open bulletin boards. Those who contribute to solving company problems in public are praised, those who do not become conspicuous. Bob Buckman emphasizes the benefits of there being "no place to hide". Similarly, when Jack Welch, CEO of General Electric, sees a new idea, he always asks: "Who else knows about this?" People know that their reward for cleverness depends on being able to explain how their idea has been shared.

Managers can also be rewarded for subordinate's participation. For example, at NUMMI first-level supervisor's job evaluation depends in part on their subordinate's participation in the suggestion program.

In order to encourage not only sharing but also evaluation and dissemination of ideas, knowledge-creating divisions must be rewarded for creating knowledge that other divisions use. Corporate headquarters cannot monitor the value of the knowledge transfer between units, or even whether any knowledge is shared. Knowledge-creating divisions face costs of creating an idea, posting it to the corporate computer network, posting it carefully (for example, avoiding division-specific jargon, being complete, creating helpful keywords, providing appropriate pointers to people who can supplement the report), and helping the knowledge-using unit implement the idea.

One idea is to pay for each posted idea. This promotes quantity but not quality of ideas and provides no incentive for idea creators to help adopters in implementation. A more complex alternative is to pay for the measured quality of each idea. This provides better incentives for quality ideas but is expensive due to the costs of evaluation. In addition, there is still no incentive for idea generators to help adopters. A third alternative is to pay bonuses based on knowledge-using units claimed results. Variants on this process include having knowledge-using units nominate knowledge-creating units for internal awards, or giving each knowledge-using unit a fixed number of prizes it can award to knowledge-creating units that help it out.

Adoption depends in part on validation because ideas that are clearly effective are more likely to be adopted. But even effective ideas are sometimes not adopted and there are several psychological reasons for this. Potential adopters may find it hard to believe that ones own ideas are not better than those from elsewhere. In addition, many people find it difficult to see the applicability of ideas from elsewhere because understanding how ideas can work in new contexts can be difficult to perceive. Finally, it can be embarrassing to say others did it better since rewards typically go to "can do" people. These tendencies may be reduced if people are exposed to lots of stories of stolen, adopted, and adapted ideas, and of those using these techniques are acknowledged and rewarded.

Structures

The most important structural component that encourages creativity or idea generation is often providing time to experiment and tinker. This may run counter to other productivity measures that emphasize efficiency. Also, formal employee involvement structures such as brainstorming, suggestion programs, quality circles, and self-directing teams support both creating and sharing knowledge. People need the power and the responsibility to make improvements.

Another key element is to make the knowledge explicit. Many Japanese firms stress the importance of formalizing knowledge, turning it from tacit to explicit. At the same time, these same firms often stress the importance of being "on site" so one can use most of the five senses to understand a problem.

To promote evaluation, companies must institutionalize means of learning from past experience: Companies must review their successes and failures, assess them systematically, and record the lessons in a form that employees find open and accessible. One expert has called this process the "Santayana Review", citing the famous philosopher George Santayana, who coined the phrase 'Those who cannot remember the past are condemned to repeat it'.

A variety of organizational structures can promote the dissemination and adoption of ideas. Despite the current emphasis on technology and new methods of idea transmission, much knowledge remains tacit and is most efficiently transmitted in person, renewing the importance of decidedly low-tech practices including job rotation across units, cross-functional meetings, cross-unit or cross-group meetings (e.g., sales convention), and mentoring, training, and free time during coffee breaks.

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Technology

What technologies support knowledge transfer? How can we integrate new technologies such as Intranets, groupware, the Internet, with other managerial practices? One way in which technology may promote idea generation is through its ability to provide information, including real-time tracking of results, and communication with customers.

Groupware promotes sharing by tracking the status of ideas and communicating them across a group, or further with wide-area networks. Technology helps the quick evaluation of new ideas by capturing actions and transactions and computing their effectiveness. Personal computers can assist through the use of statistics.

Technology can help with the dissemination of ideas by making it easier to target appropriate recipients such as

1. a group defined formally by a common product, job title, or project,
2. a group formed by management, or
3. an ad hoc group formed by workers such as a mailing list, with either public or private membership.

As the technology develops, the groupware itself should help determine who is likely to need a piece of information. Some examples are bulletin boards, Web pages, and newsgroups where people self-select to read. Complementing newsgroups and email, Internet "push" technology (currently implemented by Pointcast, for example, on the World Wide Web) deliver news of the sorts requested by users. Those adopting new ideas can use email to communicate with the disseminators of new ideas and ask for help in implementation.

Business Development and Functional Support

4PL (Fourth Party Logistics) is a company who manages 3PL's on behalf of the customer. 4PL providers do not own assets for transportation or warehousing, but rather leverage the solutions created by 3PL providers, in order to identify and provide 'best in class' services to their clients. The customer does not have to deal with all these 3PL's individually but has one single point of contact: the 4PL company.

The business operations of 4PLs differ from those of asset based 3PLs. 3PLs do not own warehouse or truck fleets, but their expertise resides in managing information and coordinating transactions. #PLs have traditionally focused on the transportation and distribution of financial products, inbound cargo operation, procurement and hinterland transportation movements, where as 4pl operations are involved with the raw materiels stage through to the end product distribution stage of the supply chain. The range of products and services provided by a 4PL is extensively yet specific to client needs. What should be common to all 4PL relationship are knowledge transfer, business devlopment and functional support. The key benefit sought from 4PL is in increasing shareholder value.

Check Your Progress

State Whether the Following Statements are True or False

4. The method of SCE moves along a classical definition of a value-adding supply chain within, from and between companies and markets.
5. Knowledge management addressed how organizations can manage the knowledge embedded in its systems, and contained in the heads of its employees.
6. Adoption depends in part on validation because ideas that are clearly effective are more likely to be adopted.

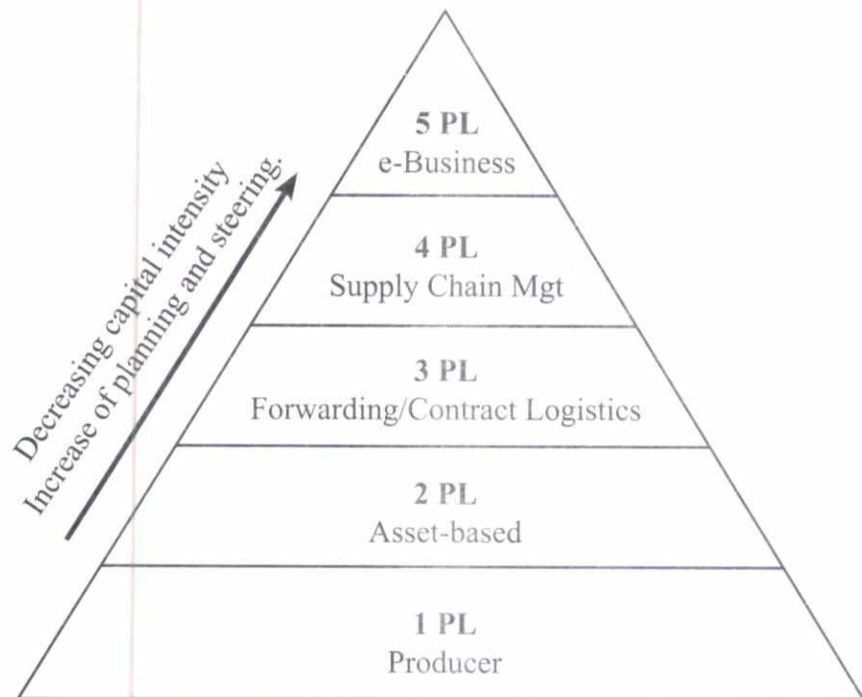


Fig. 5.1: 5 PL

By using knowledge process outsourcing and their supply chain management expertise and skills, 4PL are able to manage manufactures, transportation providers, freight forwarders, custom brokers and even 3PLs on behalf of their customers. By doing so, 4PLs act as the sole contact point for all supply chain management operation and monitor the efficiency of these operation for their customers.

5.6 SUMMARY

- Outsourcing is often taking a set of work, tasks, responsibilities or functions and transferring them to an outside service provider. 3PLs have led the way in logistics outsourcing. Creation of a 3PL presented a way for a commodity-service logistics provider to move into higher margin, bundled services.
- A good 4PL will have the shipper perspective and experience in what he does and offers to prospective customers. A successful 4PL should have both the strategic and tactical capabilities. He should have real world logistics experience, especially on the "shipper"/customer side.
- An intermediary can be a transport facilitator as a third party in providing linkages between shippers and carriers. Transport operators include road operators, rail operators, inland waterway operators, and ocean container carriers.

- Supply Chain Engineering (SCE) describes a method for the conceptual construction and realization of logistic and product oriented supply chains within a company and beyond its borders.
- Knowledge management addressed how organizations can manage the knowledge embedded in its systems, and contained in the heads of its employees. It also systematically considers how advanced information technology can be used to leverage existing knowledge and create new knowledge.

5.7 KEY TERMS

- **Outsourcing:** Outsourcing is often taking a set of work, tasks, responsibilities or functions and transferring them to an outside service provider.
- **Third Party Logistics Provider:** The services offered by a middleman in the Logistics Channel that has specialized in providing, by contract, for a given period, all or a considerable number of the logistics activities for other firms.
- **Fourth Party Logistics Provider:** A 4PL provider is a Supply Chain integrator who assembles and manages the resources, capabilities and technology of its own organization with those of complementary service providers.
- **Container Transport:** Container transport involves intermodal door-to-door services comprising oceangoing services, as well as land-based transport services.
- **Ocean Container Carriers:** Ocean container carriers are the most visible link for international movement of containers, as most container moves include at least one sea leg.
- **Inland Waterway Operators:** Inland waterways suitable for transporting goods can take the form of a natural river, an artificial man-made canal, or an area of water that is closely connected to the shore.
- **Supply Chain Engineering (SCE):** It describes a method for the conceptual construction and realization of logistic and product oriented supply chains within a company and beyond its borders.

5.8 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Third-party logistics (3 PLs) is the use of an outside company to perform all or part of the company's materials management and product distribution functions.
2. The term "fourth-party logistics provider" is a trademarked term owned by Andersen Consulting. It refers to the evolution in logistics from suppliers focused on warehousing and transportation (third-party logistics providers) to suppliers offering a more integrated and value added solution.

3. Container transport involves intermodal door-to-door services comprising oceangoing services, as well as land-based transport services through trucks, rail, and/or barges to move containers in an end-to-end shipping linkage pattern.
4. True
5. True
6. True

5.9 QUESTIONS AND EXERCISES

Short Answer Questions

1. What is outsourcing?
2. Define 3PL services.
3. Explain 4PL services.
4. What are the Differences between 3PL & 4PL?

Long Answer Questions

1. Briefly explain carrier management. What is the carrier obligation and liability?
2. What is supply chain engineering? Explain.
3. Discuss the 4PL value added services and with reference to growing importance of knowledge transfer.
4. What are the components of knowledge transfer?

UNIT 6 SPECIAL LOGISTICS

Structure

6.0 INTRODUCTION

Case Let: Supply Chain Practices of Three European Apparel Companies: Zara, H&M and Benetton

Zara, one of the pioneers of fast fashion, developed a fully integrated supply chain model. The processes like design, production and distribution were carried in-house and it owned and operated all the stores. H&M, on the other hand, designed and distributed the garments, and owned the stores, while the manufacturing was completely outsourced. Benetton designed and manufactured all the garments, but did not own any stores.



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Zara

Zara, the flagship brand of the Spain-based Inditex Group, operated through 1,058 stores located in 69 countries across the world as of March 2008. Zara pioneered the concept of customized retailing and was able to conceptualize the garment, develop, and deliver it to the stores within two to three weeks.

Design

Zara's design process began with spotting the trends across the world. The details of the trends in vogue were then passed on to the design and production center at Zara's headquarters in Spain. Zara had a dedicated design team in Arteixo, A Coruña, in northern Spain. Ideas for new designs or for modifications to be made in existing designs mainly came from Zara's stores.

Distribution

The distribution of garments was carried out at Zara's 500,000 square meter distribution centers in Arteixo. This center was located centrally among 14 manufacturing plants in La Coruña. Zara had its own railway track of 211 km on which the goods moved to the distribution center.

Hennes & Mauritz

Sweden based Hennes & Mauritz (H&M) was among the pioneers in fast fashion, and apart from introducing its own styles, it also scouted around the world for styles and fashion that could click among customers.



Design

Initially, H&M sourced the products mostly from its agents in Asian countries and sold them through its stores. In the late 1980s, H&M began building a

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design team so that it could come out with products that met customer's tastes and requirements.

Distribution

A large part of the finished products that were manufactured and shipped using external contract companies to the central warehouse in Hamburg, Germany, which served as the transit terminal. Most of the goods from the production centers across the world passed through this transit terminal on their way to the destination country.

Benetton

In 2004, Italy-based clothing company Benetton SpA (Benetton) formally adopted the 'Dual Supply Chain system, The new system was a top down, pull driven supply chain, which enabled the company to bring in more products on to the store shelves more often, in accordance with the growing demands of the customers and changing fashion trends.



Design

The responsibility of designing, and keeping tabs on the innovations happening in the apparel retail sector remained with the headquarters of Benetton. Benetton had a design center at Ponziano, Italy. The design center had several designers, from various backgrounds and cultures. The designers worked in three groups, with the first group taking care of the commercial aspect of the products, the second group carrying out research on the fabrics and the third responsible for graphics.

Distribution

The clothes were distributed through a distribution center located in Castrette,

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Italy. It was spread across 20,000 square meters, and could handle around 40,000 cartons, both incoming and outgoing, every day. From the distribution center, the garments were sent to around 5,000 Benetton outlets located across the world.

The Dual Supply Chain

Each fashion season generally began with ten alternative colors of which only two or three recorded high demand. As Benetton delayed dyeing the garments, it provided the company an opportunity to respond to the demand on time.

Source: *http://www.icmrindia.org*

In the previous unit, we dealt with the concept of 3PL/4PL services. The unit also discussed about the carrier management, and supply chain engineering and 4PL value added services: knowledge transfer.

This unit will also help you to understand about inter-modal and multimodal logistics, logistics for trade fairs and events, GS1 system of world-wide supply chain standards system, E-logistics, Warehouse logistics and reverse logistics. To make the learning easier, we will take the help of globally recognized best practices.

6.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

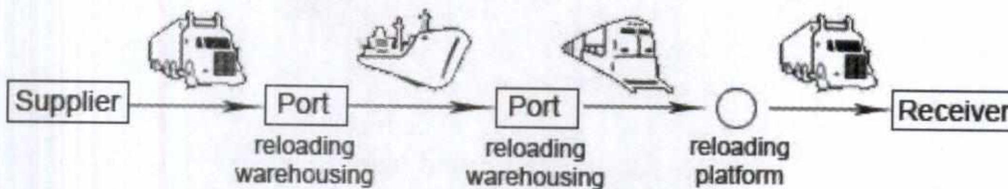
- Learn about intermodal and multimodal logistics
- Discuss the logistics for trade fairs and events
- Understand GS1 system of world-wide supply chain standards system
- Know about E-logistics and warehouse logistics
- Explain the concept of reverse logistics.

6.2 INTERMODAL AND MULTIMODAL LOGISTICS

Intermodal transport combines the accessibility of inland transport modes with the long-haul capabilities of ocean shipping. Intermodal transport can be defined as the movement of goods in one and the same loading unit that uses successively several modes of transport without handling the goods themselves in changing transport modes. The rise of intermodal transport has resulted in dramatic changes in the pattern of freight transport. There is a contrast between the standardization of ocean transport services and that established on land. Regional differences characterizing Asia, Europe, and North America include geographical differences, differences in economic development, and differences in transport infrastructure. As an integrated transport system, intermodal freight transport consists of various elements.

Intermodal transport covers combined transport on the international level. It represents the flow of goods where the means of transport (road, rail, air, water) change at least one time on the existing transport route. Separate mode of transport is responsible for its part of the route in the transport chain. There is not necessary to containerize the goods, while modern manipulation facilities are settled on the separate nods.

Intermodal transport chain can be built up in the following way:



International multimodal transport is logistical concept, which covers the movements of goods from supplier to receiver under the responsibility of a single transport operator. It represents the flow of goods, where at least on one part of the transport chain, two different modern means of transport are involved at the same time.

Multimodal transport chain



Multimodal transport operates on the global market and variety of cultures, languages and commercial practices at both ends of a trade are involved. Because of that, it is reasonable that one qualified and skilled operator (MTO – Multimodal Transport Operator) organize and be responsible for the whole transport chain on the base of one multimodal contract.

Multimodal transport and international trade in general are steered through specific regulations:

- Trading terms (INCOTERMS – determine the responsibility of involved parties),
- Letters of credit,
- Multimodal transport documents.
  - ❖ Theoretically this concept can represent multi-step or combined system of goods flow. It is executed without a change of transport units(containers, trucks...).
  - ❖ Interceptions (warehouses, reloading platforms, ports,…) on the transport route must be equipped with a special standardized manipulation facilities and infrastructure, which enable efficient and fast loading, unloading and reloading of freight units, vehicles and wagons (Roll-on-Roll-off, cranes...).

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Expensive modern reloading port facilities are necessary for successful intermodal and multimodal operations. Container manipulation (train-ship, truck-ship and opposite direction) are mostly performed operations in ports.



In a globalizing marketplace, with dwindling transport costs, increased global sourcing activities, and widely diffused production sites, the volume of international trade has grown dramatically (Robinson 2002). Shippers increasingly expect their carriers and logistics service providers to supply more rapid and reliable delivery services so as to minimize their costs associated with warehousing, inventory holding, and other aspects of production and distribution. Facing a rise in customer expectation, carriers are providing a wider variety of, and more sophisticated options in, their transport logistics services.

Globalisation has been facilitated by the ability to move goods and services across borders at a reduced cost. Just as the computer revolutionised the flow of information, the shipping container revolutionised the flow of goods. But turning that idea into real-life business practice required many additional innovations. New equipment, from dockside cranes to the containers themselves, had to be developed. Carriers and shippers had to settle on standard container sizes. Ports had to strengthen their wharves, create connections to rail lines and highways, build places to store containers and strike new deals with their unions.

Development of specialized containers with a wide range of types, sizes and configurations permits containerisation of most cargo. Containerisation has transformed the way in which cargoes are handled. There are three fundamental concepts in moving cargo; port to port, port to point and point to point cargo.

1. Port-to-port reflects moving cargo from say Mumbai to New York. This is used when cargo volume does not provide for a full container load (less than container load or LCL) or when the shipper or consignee does not have the facilities to load or unload the containerized cargo at his premises, he or she can utilize the services of forwarders, consolidators or the carrier to stow the goods in containers at the port of departure.

2. Port-to-point refers to moving cargo from a port to an inland destination, for example, moving a cargo from Chennai port to Dear borne, USA. Combinations of door-to-door and port-to-port service are possible, depending on the desires of the ship-per and the facilities available. While these combinations are more advantageous than Port-to-Port service, the cargo will still be exposed to the hazards of theft, weather and additional handling during part of the journey.
3. Point-to-point means moving the cargo from the shipper's door to the final destination.

The point-to-point movement is characteristic of intermodal transport. In the container age, any city with good port facilities, including feeder rail and truck lines, can compete with any place in the same large region. By sharply cutting costs and enhancing reliability, container-based shipping reduced transportation costs substantially, increased the volume of international trade enormously, and made complex supply chains possible.

The diffusion of containerisation has changed not only how point to point cargo is handled. Three additional technological changes: larger ships, larger trains, and computerization of freight tracking and billing have spawned three kinds of intermodal services: micro bridge, minibridge and land bridge.

1. **Microbridge:** Cargo moving port to port via land or rail; inland destination served overland by rail. It is a joint water, rail or truck container movement on one Bill of Lading to or from a foreign port, to or from an inland U.S. city.
2. **Minibridge:** Cargo moving port-to-port via land or rail; port destination served overland by rail on one bill of lading.
3. **Landbridge:** A landbridge movement in which cargo originating/destined to an inland point is railed or trucked to/from the water port for a shipment to/ from a foreign country. The carrier is responsible for cargo and costs from origin to destination.

The use of these different options has not only brought down transportation costs, cargo damage has been greatly reduced and it has also reduced the cycle time of the transportation cycle.

There have also been developments in the less-than-container-load (LCL) market. On LCL shipments, the shipper can still load goods into a container, but the container will be delivered to a consolidation point at the pier where other shippers' goods will also be stowed in the container. The opportunity existed for a carrier, using existing technology and resources, to create a "fast track" for LCL shipments.

By combining the existing assets of multiple companies involved in the movement of the cargo and improving coordination, more control over the speed of delivery can be accomplished. This type of operating system expedites inbound intermodal shipments from the port into the land LTL network most expeditiously. For example, Ocean Guaranteed uses the assets of APL Logistics, APL Liner, and

Con-way Freight, enabling them to deliver cargo from Asia to the United States in an additional one to four days anywhere in the United States.

Intermodalism has extended to cover ocean to air transshipment. With compatible equipment and scheduling, it is now possible to marry the low cost of ocean shipping with the timely convenience of air freight. Examples of this trade pattern include a sea-air leg originating in Japan and moving to North America's West Coast via ship. From there, cargo is transferred to air freighter or combination passenger-cargo plane for the flight to Europe.

6.3 LOGISTICS FOR TRADE FAIRS AND EVENTS

Since the tragic events of 11 September 2001, the international community has paid increasing attention to the potential security threats to international trade and transport systems. It has been acutely alert to the need for improving container transport security.

As a result, several conceptual frameworks aimed at enhancing container transport security have been introduced, with a special emphasis on protecting the vulnerability of containerized sea-trade operations. The US Department of Homeland Security has strengthened protection against threats and hazards by working towards the strategic goals of (DHS 2004):

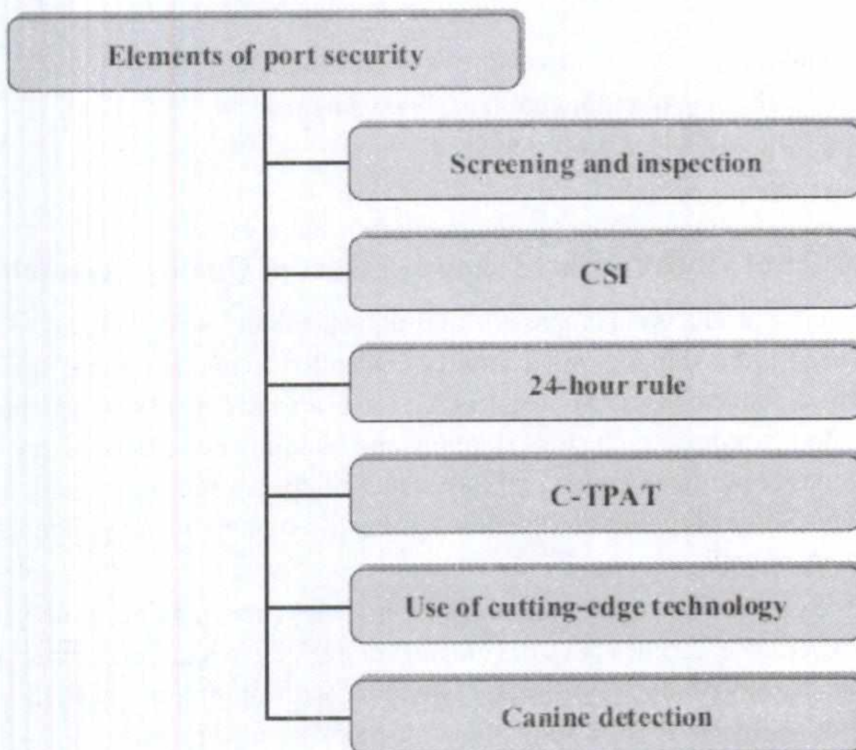
- Awareness: enhance awareness of the importance of security in container transport.
- Prevention: build and administer an effective container transport security regime to detect and mitigate threats both domestically and internationally.
- Protection: increase military and civil operational presence in ports, coastal areas, and beyond to safeguard property and the economy.
- Response: improve responsiveness to events with which security is concerned.
- Recovery: lead efforts to restore services and resume business after acts of terrorism, natural disasters, or other emergencies.

By taking a layered approach to transport security, the US Customs and Border Protection (CBP 2006) has put forth a system of security measures to ensure that protective measures are in place from one end of a container transport chain to the other. Specifically, a multilayered defence strategy has been implemented to keep the container transport chain safe and secure. As shown in Figure, the multilayered defence strategy consists of six elements:

- Screening and inspection: Customs and Border Protection screens all the cargoes before their arrival using advanced technologies.
- Container security initiative: This enables Customs and Border Protection to identify high-risk maritime containerized cargoes before they are loaded on board vessels.

- 24-h rule: Under this requirement, manifest data must be provided 24 h prior to the maritime container being loaded onto the vessel in foreign ports.
- Customs trade partnership against terrorism (C-TPAT): With C-TPAT, Customs and Border Protection and partner firms in the container transport chain are working together to improve container security.
- Use of cutting-edge technology: Customs and Border Protection utilizes large scale X-ray and X-ray machines and radiation detection devices to screen cargo.
- Canine detection: Hundreds of canine detection teams capable of identifying narcotics, bulk currency, human beings, explosives, agricultural pests, and chemical weapons are deployed at the ports of entry.

In addition to these layered security measures, technology plays an important role in raising the efficiency and security of containerized cargo shipments. Koch (2005) highlighted three key technologies, namely, radio-frequency identification (RFID) technology, the smart box initiative, and NII, which can be deployed to support container transport chains to improve container transport security.



Elements of a multilayered defence strategy. CSI container security initiative, C-TPAT customs trade partnership against terrorism

6.3.1 Consolidation and Groupage

A typical freight consolidation facility is the container freight station. The primary functions of the container freight station are summarized as follows:

- receipt and dispatch/delivery of cargo;
- stuffing and stripping of containers;
- transit operations by rail/road to and from serving ports;
- customs clearance;
- consolidation and deconsolidation of less than container load cargo;
- temporary storage of cargo and containers;
- reworking of containers;
- maintenance and repair of container units.

The major benefits of using a container freight station include:

- concentration points for long-distance cargoes and their unitization;
- service as a transit facility;
- customs clearance facility available near the areas of production and consumption;
- issuance of a through bill of lading by shipping lines, thereby creating full liability
- for shipments;
- reduced overall level of empty container movement;
- reduced transport cost;
- increased trade flows.

6.3.2 Logistics of Time Perishable and Logistics of Quality Perishables

The term perishable products encompass fresh fruit, vegetables, meat, dairy and eggs. These items need to be shipped under strictly-controlled temperature and storage conditions. Dried, canned or otherwise preserved foods are not considered perishable and therefore do not require such strict shipping and handling conditions. They can be stored for longer periods of time and at warmer temperatures since there is no risk of spoilage. Some shipping companies will handle live plants and animals as perishable goods as well.

Perishable goods were among the first commodities carried by air. With years of operating experience, airlines have developed very effective handling techniques for chilled and frozen products, providing shippers with optimum, cost-efficient packaging methods for these time and temperature sensitive commodities.

Transporting Perishable Products

The logistics of transporting perishable goods is complex, as every hour in transit represents lost shelf life and potential lost income for wholesalers and retailers. Airlines and shipping companies who handle perishables must operate according to the standards set for perishable imports by national governments, which address specific temperatures depending on the type of cargo, the type of container used for shipping and whether it is sealed and labeling instructions regarding packing time

and location. All of this information is important to importers and retailers selling perishable products.

Time and Temperature Management

The transportation of Time and Temperature sensitive goods is a core service offered by IATA airlines and affiliated freight forwarders or logistics service providers. These goods are originating from the Healthcare sector, indistinctive of their origins, Time and Temperature management is the overarching need that binds these highly distinctive commodities together.

Unused space is waste in liner shipping. Shipping is one of the most perishable products as space cannot be stored once the ship has departed from the port. To reduce the average operational cost, shipping lines tend to employ large vessels to benefit from economies of scale in terms of ship size.

When a product is perishable, fast delivery ensures minimum loss as a result of product deterioration. If there is an urgent need for spare parts to repair a ship, which has to remain idle until the part is available, the loss from shipment delay will far outweigh the transport cost.

Cost is not the only factor, as shown by the seasonal trade in perishable goods such as raspberries and asparagus. These products travel as air freight because the journey by refrigerated ship is too slow to allow delivery in prime condition. However, the shipping industry has tried to recapture that cargo by developing refrigerated containers with a controlled atmosphere which prevents deterioration, thus permitting them to compete for this cargo.

Food commodities transported by sea are perishable and need to be transported at carefully regulated temperatures. Broadly speaking the refrigerated cargoes can be divided into three groups:

1. **Frozen cargo:** Certain products such as meat and fish need to be fully frozen, and transported at temperatures of up to –26°C.
2. **Chilled cargo:** Dairy products and other perishables are transported at low temperatures, though above freezing point, in order to prevent decomposition.
3. **Controlled temperatures:** Fruit transported by sea is generally picked in a semi ripe state, and allowed to finish ripening at sea at a carefully controlled temperature. For example bananas require precisely 13°C.

In all cases it is essential that temperatures are maintained consistently throughout the ship in order to prevent deterioration of the cargoes. Even quite small temperature deviations can be disastrous, especially for tropical fruit. Because of the perishable nature of the product, a reliable transport system is essential. The key stages in the process involve harvesting, transportation to the port, where the cargo is placed in refrigerated storage facilities, transfer to the ship, the sea voyage, discharge into refrigerated storage facilities and finally distribution. In the last decade

NOTES

unitization has been used very extensively to improve efficiency. The degree of automation in this system varies considerably. For example, in some trades bananas are still carried on to the ship by stevedores, while in others banana conveyors are used. Palletization has also been extensively introduced into the reefer trades in order to make the transportation of refrigerated cargo more efficient. A substantial amount of refrigerated cargo is now transported in reefer containers. These are containers which are fully insulated. Some have their own refrigeration plants which can be plugged into an electric socket on the ship, while other rely on receiving cold air from a central shipboard system in reefer container ships. The advantage of reefer containers is that temperature can be more closely and accurately regulated than is possible in the hold of refrigerated ships. In addition they facilitate transfer of refrigerated cargo through ports which have no refrigerated storage capacity.

6.3.3 Cold Chain and its Logistics

While Globalization has made the relative distance between regions of the world much smaller, the physical separation of these same regions is still a very important reality. The greater the physical separation, the more likely freight can be damaged in one of the complex transport operations involved. Some goods can be damaged by shocks while others can be damaged by undue temperature variations. For a range of goods labeled as perishables, particularly food, their quality degrades with time since they maintain chemical reactions which rate can be mostly mitigated with lower temperatures. It takes time and coordination to efficiently move a shipment and every delay can have negative consequences, notably if this cargo is perishable. To ensure that cargo does not become damaged or compromised throughout this process, businesses in the pharmaceutical, medical and food industries are increasingly relying on the cold chain technology.

The cold chain refers to the transportation of temperature sensitive products along a supply chain through thermal and refrigerated packaging methods and the logistical planning to protect the integrity of these shipments.

Specialization has led many companies to not only rely on major shipping service providers such as the United Parcel Service (UPS) and Fedex, but also more focused industry specialists that have developed a niche logistical expertise around the shipping of temperature sensitive products. The potential to understand local rules, customs and environmental conditions as well as an estimation of the length and time of a distribution route make them an important factor in global trade. As a result, the logistics industry is experiencing a growing level of specialization and segmentation of cold chain shipping in several potential niche markets within global commodity chains. Whole new segments of the distribution industry have been very active in taking advantage of the dual development of the spatial extension of supply chains supported by globalization and the significant variety of goods in circulation. From an economic development perspective, the cold chain enables many developing countries to take part in the global perishable products market. From a geographical perspective, the cold chain has the following impacts:

- **Global:** Specialization of agricultural functions permitting the transport of temperature sensitive food products to distant markets. Enables the distribution of vaccines and other pharmaceutical or biological products from single large facilities.
- **Regional**: Can support the specialization of production and economies of scale in distribution. This could involve specialized laboratories exchanging temperature sensitive components or large cold storage facilities servicing regional grocery markets.
- **Local**: Timely distribution to the final consumer of perishables, namely grocery stores and restaurants.

While global commodity chains are fairly modern expansions in the transportation industry, the refrigerated movement of temperature sensitive goods is a practice that dates back to 1797 when British fishermen used natural ice to preserve their fish stock piles while at sea. This process was also seen in the late 1800s for the movement of food from rural areas to urban consumption markets, namely dairy products. Cold storage was also a key component of food trade between colonial powers and their colonies. For example, in the late 1870s and early 1880s, France was starting to receive large shipments of frozen meat and mutton carcasses from South America, while Great Britain imported frozen beef from Australia and pork and other meat from New Zealand. This process was incited by a shortage of meat production in Europe and substantial surpluses in developing countries. By 1910, 600,000 tons of frozen meat was being brought into Great Britain alone. The first reefer ship for the banana trade was introduced in 1903 by the United Food Company. This enabled the banana to move from an exotic fruit that had a small market because it arrived in markets too ripe, to one of the world's most consumed fruit.

The temperature controlled movement of pharmaceuticals and medical supplies is a much more modern transit option than the shipping of refrigerated or frozen food. Since the 1950s, logistical third party companies began to emerge and institute new methods for successfully transporting these global commodities. Before their emergence, cold chain processes were mostly managed in house by the manufacturer. In the United States, Food and Drug Administration restrictions and accountability measures over the stability of the cold chain incited many of these companies to rely on specialty couriers rather than completely overhauling their supply chain facilities. A specialized industry was thus born. The value of the cold chain in the preservation of expensive vaccines and medical supplies was only beginning to be recognized when these logistical providers started to appear. As awareness began to grow, so did the need for efficient management of the cold chain.

The reliance on the cold chain continues to gain importance. Within the pharmaceutical industry for instance, the testing, production and movement of drugs relies heavily on controlled and uncompromised transfer of shipments. A large portion of the pharmaceutical products that move along the cold chain are in the experiment

or developmental phase. Clinical research and trials is a major part of the industry that costs millions of dollars, but one that also exp^riences a failure rate of around 80%. According to the Healthcare Distribution Management Association, of the close to 200 billion dollars in pharmaceutical distribution, about 10% are drugs that are temperature sensitive. This makes the cold chain responsible for transporting a near 20 billion dollar investment. If these shipments should experience any unanticipated exposure to variant temperature levels, they run the risk of becoming ineffective or even harmful to patients.

Temperature control in the shipment of foodstuffs is a component of the industry that has continued to rise in necessity with international trade. As a growing number of countries focus their export economy around food and produce production, the need to keep these products fresh for extended periods of time has gained in importance. Increasing income levels create a change in diet with amongst others a growing appetite for fresh fruit and higher value foodstuffs such as meat and fish. Persons with higher socioeconomic status and with more economic means are more likely to consume vegetables and fruit, particularly fresh, not only in higher quantities but also in greater variety. Consumers with increasing purchase power have become preoccupied with healthy eating, therefore producers and retailers have responded with an array of exotic fresh fruits originating from around the world.

Any major grocery store around the world is likely to carry tangerines from South Africa, apples from New Zealand, bananas from Costa Rica and asparagus from Mexico. Thus, a cold chain industry has emerged to service these commodity chains. In 2002, an estimated 1200 billion dollars, worth of food was transported by a fleet of 400,000 refrigerated containers (Reefers). Alone, the United States imports about 30% of its fruits and vegetables and 20% of its food exports can be considered perishables. The uncompromised quality and safety of this food is often taken for granted, despite being the main reason behind the ability to sell the food. The cold chain serves the function of keeping food fresh for extended periods and eliminating doubts over the quality of the food products. In all the supply chains it is concerned with, cold chain logistics favor higher levels of integration since maintaining temperature integrity requires a higher level of control of all the processes involved. It may even incite third party logistics providers to acquire elements of the supply chain where time and other performance factors are the most important, even farming. This may involve the acquisition of produce farms (e.g. oranges) to insure supply reliability.

Providing Temperature Controlled Environments

The success of industries that rely on the cold chain comes down to knowing how to ship a product with temperature control adapted to the shipping circumstances. Different products require different temperature level maintenance to ensure their integrity throughout the travel process. For instance, the most common temperature standards are "banana" (13 °C), "chill" (2 °C), "frozen" (–18 °C) and "deep frozen" (–29 °C). Staying within this temperature is vital to the integrity of a shipment along

the supply chain and for perishables it enables to insure and optimal shelf life. Any divergence can result in irrevocable and expensive damage; a product can simply lose any market or useful value.

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Being able to ensure that a shipment will remain within a temperature range for an extended period of time comes down largely to the type of container that is used and the refrigeration method. Factors such as duration of transit, the size of the shipment and the ambient or outside temperatures experienced are important in deciding what type of packaging is required. They can range from small insulated boxes that require dry ice or gel packs, rolling containers, to a 53 footer reefer which has its own powered refrigeration unit. The major cold chain technologies involve:

- **Dry ice:** Solid carbon dioxide is about –80°C and is capable of keeping a shipment frozen for an extended period of time. It is particularly used for the shipping of pharmaceuticals, dangerous goods and foodstuffs. Dry ice does not melt, instead it sublimates when it comes in contact with air.
- **Gel packs:** Large shares of pharmaceutical and medicinal shipments are classified as chilled products, which mean they must be stored in a temperature range between 2 and 8°C. The common method to provide this temperature is to use gel packs, or packages that contain phase changing substances that can go from solid to liquid and vice versa to control an environment. Depending on the shipping requirements, these packs can either start off in a frozen or refrigerated state. Along the transit process they melt to liquids, while at the same time capturing escaping energy and maintaining an internal temperature.
- **Eutectic plates**: The principle is similar to gel packs. Instead, plates are filled with a liquid and can be reused many times.
- **Liquid nitrogen**: An especially cold substance, of about –196°C, used to keep packages frozen over a long period of time. Mainly used to transport biological cargo such as tissues and organs. It is considered as an hazardous substance for the purpose of transportation.
- **Quilts**: Insulated pieces that are placed over or around freight to act as buffer in temperature variations and to maintain the temperature relatively constant. Thus, frozen freight will remain frozen for a longer time period, often long enough not to justify the usage of more expensive refrigeration devices. Quilts can also be used to keep temperature sensitive freight at room temperature while outside conditions can substantially vary (e.g. during the summer or the winter).
- **Reefers:** Generic name for a temperature controlled container, which can be a van, small truck, a semi or a standard ISO container. These containers, which are insulated, are specially designed to allow temperature controlled air circulation maintained by an attached and independent refrigeration plant. The term increasingly applies to refrigerated forty foot ISO containers.

Perishable or temperature sensitive items are carried in refrigerated containers (called "reefers"), that account for a growing share of the refrigerated cargo being transported around the world. While in 1980 33% of the refrigerated transport capacity in maritime shipping was containerized, this share rapidly climbed to 47% in 1990, 68% in 2000 and 90% in 2010. About 1.69 million TEUs of reefers were being used by 2009. All reefers are painted white to increase the albedo (share of the incident light being reflected; high albedo implies less solar energy absorbed by the surface) with the dominant size being 40 high-cube footers (45R1 being the size and type code). For instance a low albedo container can have its internal temperature increase to 50 °C when the external temperature reaches 25 °C on a sunny day while a high albedo container see its internal temperature increase to only 38 °C under the same conditions.

The refrigeration unit of a reefer requires an electric power source during transportation and at a container yard. Regular containerships have 10 to 20% of their slots adapted to carry reefers, with some ships having up to 25% of their slots being dedicated. It is important to underline that the refrigeration units are designed to maintain the temperature within a prefixed range, not to cool it down. This implies that the shipment must be brought to the required temperature before being loaded into a reefer, which requires specialized warehousing and loading / unloading facilities. A new generation of reefers is coming online, which are equipped with an array of sensors monitoring effectively the temperature and shutting the cooling plant when unnecessary. This enables to improve the reliability of temperature control and well as extend the autonomy of the reefer.

The growth of the intermodal transportation of reefers has increasingly required transport terminals, namely ports, to dedicate a part of their storage yards to reefers. This accounts between 1% to 5% of the total terminal capacity, but can be higher for transshipment hubs. The stacking requirements simply involve having an adjacent power outlet, but the task is more labor intensive as each container must be plugged and unplugged manually and the temperature to be monitored regularly as it is the responsibility of the terminal operator to insure that the reefers keep their temperature within preset ranges. This may also forbid the usage of an overhead gantry crane implying that the refer stacking area can be serviced by different equipment. Even if reefers involve higher terminal costs, they are very profitable due to the high value commodities they transport.

6.4 GS1 SYSTEM OF WORLD-WIDE SUPPLY CHAIN STANDARDS SYSTEM

GS1 is a not-for-profit standards organisation led by Industry, dedicated to the design and implementation of international standards and solutions to enhance the efficiency and visibility of supply and demand chains across sectors globally. It is headquartered at Brussels and operates through networks of over 100 GS1 organisations located

worldwide which serve 150 countries. Over one million companies use GS1 standards and solutions to improve their top line and bottom-line performance, meet growing consumer demands on ready availability of products and services which are safe, sustainable, enhance health and wellness and enable compliance with varied requirements of buyers and legislations worldwide on the same. GS1 standards are user driven, interoperable, open, global standards and are widely used in 25 industry sectors which include Retail, Healthcare, Transport & Logistics, food service etc, over past 35 years. GS1 standards provide a global language of business which helps in identifying products, entities etc, communicate information electronically between trading partners and with consumers in a common, uniform and consistent manner.

In short, well-designed standards allow organisations to focus on how to use information rather than how to get information. Well-designed standards are more important than ever before in the context of today's challenging economy, because they are the foundation for clear, understandable exchanges that keep costs down for everyone by reducing complexity. With proper standards, the logistics of international supply chains are more efficient, more sustainable, and more profitable. GS1 creates and manages just such a proper and well designed system of standards for the global supply chain. Some companies develop their own proprietary identification, classification and data capture systems. Others use standards that are only functional within the confines of one single industry sector, or one single country. The GS1 System of Standards is a much better choice, however, because it is global, robust, multi-sector, user generated, and scalable.

No matter where in the world your company – or its suppliers, or its customers – is based, GS1 standards will function perfectly there. The GS1 System of Standards is truly global. All GS1 standards are built and maintained through the GS1 Global Standards Management Process (GSMP), a worldwide collaborative forum. The GSMP is an open and transparent process which brings together volunteers from all industries and from everywhere in the world to identify needs for standards, gather business requirements, document best practices, obtain consensus on solutions, and then develop and implement the resulting supply chain standards.

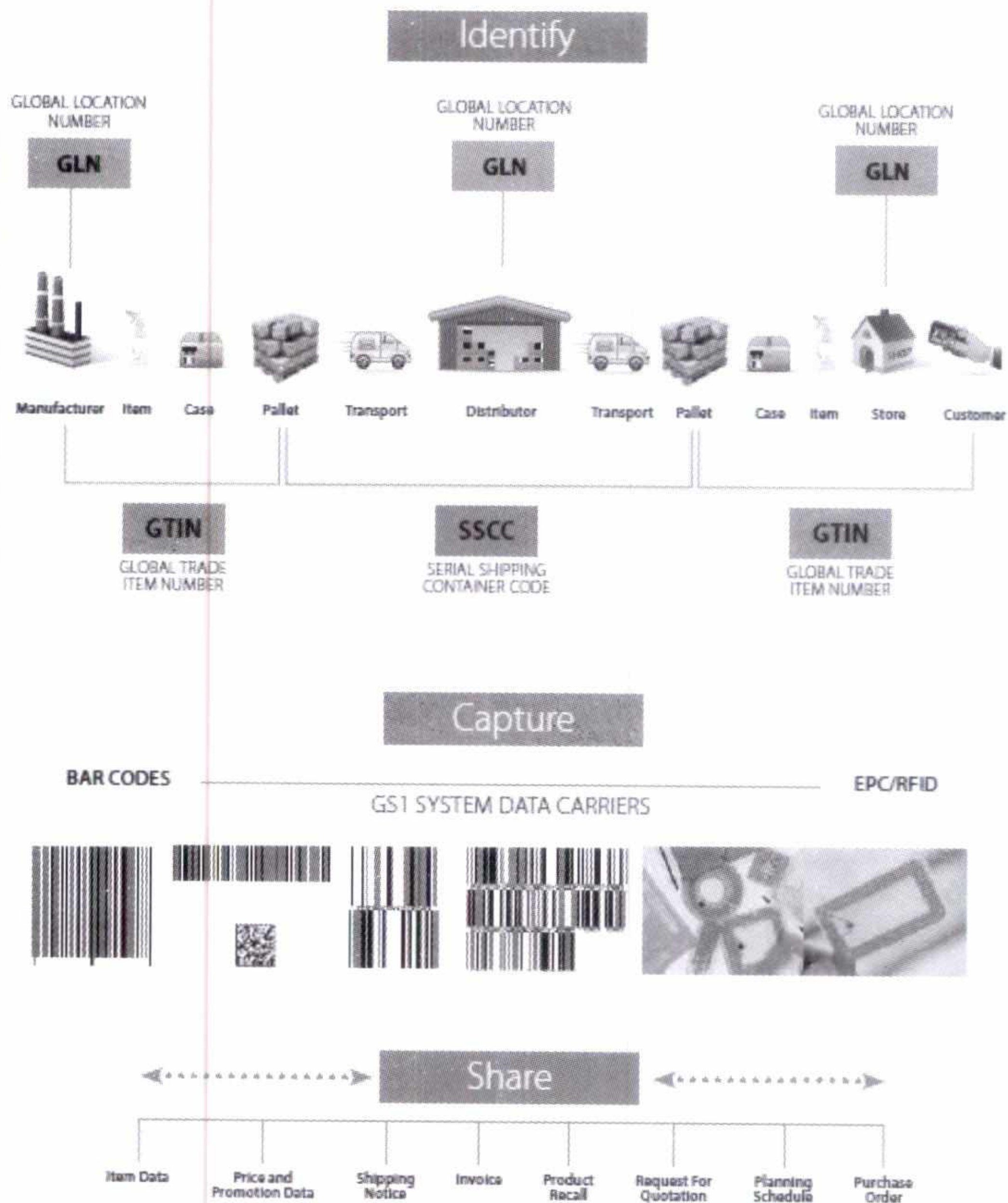
The GS1 System of Standards is a flexible architecture that ensures maximum efficiency. It is built around and upon two main elements: GS1 Automatic Identification Standards and GS1.

Communication Standards. GS1 Automatic Identification Standards are themselves composed of several elements: GS1 Identification (ID) Keys and Application Identifiers, GS1 Data Carriers and the EPC Identifier. GS1 ID Keys and Application Identifiers are specially designed to work with the GS1 Data Carriers: GS1 BarCodes or EPC/RFID tags. The EPC, which incorporates GS1 Identification Keys as well as Keys from other systems, is the foundation for encoding an EPC/RFID tag.

Check Your Progress

1. What is inter-model transport?
2. What are perishable products?
3. What do you mean by port to port transportation?

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Identify
GLOBAL LOCATION NUMBER
GLN
GLOBAL LOCATION NUMBER
GLN
GLOBAL LOCATION NUMBER
GLN
Manufacturer
Item
Case
Pallet
Transport
Distributor
Transport
Pallet
Case
Item
Store
Customer
GTIN
GLOBAL TRADE ITEM NUMBER
SSCC
SERIAL SHIPPING CONTAINER CODE
GTIN
GLOBAL TRADE ITEM NUMBER
Capture
BAR CODES
EPC/RFID
GS1 SYSTEM DATA CARRIERS
Share
Item Data
Price and Promotion Data
Shipping Notice
Invoice
Product Recall
Request For Quotation
Planning Schedule
Purchase Order

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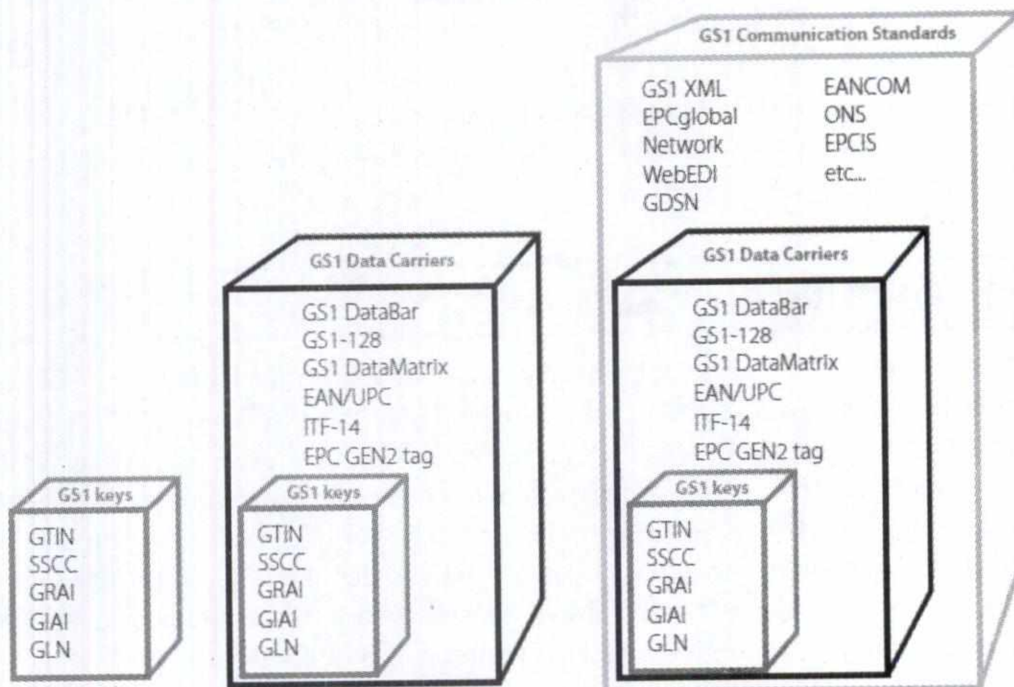


Fig. 6.1: The GS1 system

The GS1 System has been designed to ensure that all of the elements are compatible and interoperable with each other. As a result, they can be deployed in ways that meet very specific customer needs – and at the same time are compatible with future process changes in the supply chain, or new additions to the GS1 Standards family.

6.4.1 GS1 India

GS1 India is an affiliate of GS1, Brussels. It has been set up as a not-profit standards body by the Ministry of Commerce and Industry, Govt. of India and CII, FICCI, ASSOCHAM, FIEO, IMC, APEDA, Spices Board, BIS and IIP. It provides several services to Indian trade and industry which include:

- Company prefix allocation for generation of unique and universal identification numbers for products for use with data capture technologies like barcodes, RFID etc.
- Bar code scannability reports.
- Product data synchronisation service (GDSN) to facilitate data alignment, accuracy and synchronisation between suppliers and retailers.
- Consulting and Advisory to conceptualise solutions which reduce costs, enable implementation of business applications and enhance productivity in Supply Chains using GS1 global standards.

- GEPIR (Global Electronic Party Information Registry) which provides facility for hosting of company and product information on GS1 India subscribers and its linkage and visibility worldwide through GS1 interlinked GEPIR service across over 100 GS1 organisations.
- Education and training through e-learn modules and awareness/implementation workshops.

6.5 E-LOGISTICS

The development of logistics falls into three stages, namely military logistics, business logistics and e-logistics, in which the e-logistics has been the latest word appearing in the logistic industry. E-logistics simply means processes necessary to transfer the goods sold over the internet to the customer. Other and more sophisticated aspect is that E-logistics is wide-ranging topic related to supply chain integration that has effect of eliminating intermediaries (such as wholesaler or retailers) and also fosters the emergence of new players like logisticians, whose role is to adapt traditional logistics chains to take into account the requirements of e-business.

Presently the e-logistics has been mostly defined according to the definition of Electronic Logistics, in which the most typical one is that electronic logistics refers to the process which utilizes web technology as an important tool to manage the whole logistic process or some sectors of it. In the broad sense of supply chain, logistics has been regarded as the most important bridge linking each entity in the supply chain together. As a consequence, it becomes the focus of logistics. The activities of supply chain have shaped a dynamic random process enhancing the circulation of logistics, commerce flow and information flow and making these three parts interlaced with each other.

The importance of supply chain enables it become the foundation of logistics. The improvement of supply chain, which must through the systematic view realize the integration of logistic activities on the basis of integrated informationization, can enhance the development of logistics. It is characterized by electronic technology, which utilizes Internet to complete the coordination, monitoring and management of the whole logistic process and provide all mediate services between Internet foregrounding and end customers. Typically, this pattern combines various software technologies and logistic services, in which way the close link among fund flow, logistics and information flow can be completed. What's more, this type of link can provide visibility among enterprises, which enables these enterprises to control and manage storage to a maximum extent. Meanwhile, with the aids of such advanced information technologies as customer management system, the integration of commercial intelligent computers and telephones, geographical information system, GPS, Internet and wireless net technology as well as such logistics management technology and modes as rationing optimization, dynamic monitoring, intelligent transportation and storage optimization, the e-logistics provides an advanced and

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integrated management system and then enables enterprises to establish supply chain system as soon as possible. It can be imagined that without electronic technology, it is impossible for all participates in the supply chain to operate regularly when they have to receive thousands of cases involving hundreds of suppliers and retailers.

As of now most famous professional logistics companies such as FedEx have made use of the e-logistic system to different extends. FedEx, which provides various individualized solutions according to the scale of customer group, realizes the variety of service and enhances the feasibility of market. Among these logistic companies, the most typical one is the third-party logistics, which refers to an operation and management pattern in which the manufacturer relegates its logistic activities to a professional logistic company so that it can focus on its main business. Meanwhile, the manufacture can keep close contact with the relegated logistic company through information system so that it can monitor and control the whole logistics process.

B2C Electronic Commerce

- Electronic Storefront has its own URL at which buyers can place orders. Electronic Malls (Cybermall or e-mall) is a collection of individual shops under one Internet address.
- Referral malls are those in which you are transferred to a participating storefront.
- Electronic shopping cart enables you to gather items from various vendors and pay for them in one transaction.

Online Service Industries

- Cyber-banking (electronic banking) conducting various banking activities outside of a physical banking location. Online Securities Trading uses computers to trade stocks, bonds and other financial instruments. Online Job Market advertises available positions, accept resumes and takes applications via the Internet.
- Travel Services plan, explore and arrange almost any trip economically over the Internet.
- Real Estate view, sort and organize properties according to your preferences and decision criteria. Really Simple Syndication (RSS) information that you request, called a feed, comes to you daily through a piece of software called a newsreader.

Issues in E-tailing

- Click-and-mortar companies face channel conflict with regular distributors when they sell directly to customers online. Multi-channeling is a process that integrates a companies online and offline channels.
- Order fulfillment includes not only providing customers with what they ordered and doing it on time, but also providing all related customer service.

B2B Electronic Commerce

Sell-side marketplaces are where organizations attempt to sell their products or services to other organizations electronically from their own private e-marketplace. Buy-side marketplaces are where organizations attempt to buy needed products or services from other organizations electronically. E-Procurement is using electronic support to purchase goods and materials, sourcing, negotiating with suppliers, paying for goods and making delivery arrangements. Group purchasing is when the orders of many buyers are combined so that they constitute a large volume.

Electronic Exchanges

Many buyers and sellers; open to all business organizations; exchanges are for both indirect materials and direct materials. Vertical exchanges connect buyers and sellers in a given industry. Horizontal exchanges connect buyers and sellers across many industries and are used mainly for MRO materials.

Functional exchanges are where needed services such as temporary help or extra office space are traded on an "as-needed" basis. Electronic hubs are used to facilitate communications and coordination among business partners, frequently along the supply chain.

Electronic Payments

- Electronic payment systems enable you to pay for goods and services electronically.
- Electronic checks (e-checks) are similar to paper checks and are used mostly in B2B.
- Electronic credit cards allow customers to charge online payments to their credit card account.
- Purchasing cards are the B2B equivalent of electronic credit cards and are typically used for unplanned B2B purchases.

Electronic Cash

Stored-value money cards allow you to store a fixed amount of prepaid money and then spend it as necessary. Smart cards contain a chip called a microprocessor that can store a considerable amount of information and are multipurpose – can be used as a debit card, credit card or a stored-value money card.

Person-to-person payments are a form of e-cash that enables two individuals or an individual and a business to transfer funds without using a credit card.

6.6 WAREHOUSE LOGISTICS

The words 'Warehouse' and 'Godown' are synonymous. The terms like warehouse, depositor, warehouseman, etc. have been defined in the relevant State Warehousing

Acts under which Public Warehouses in India are licenced and regulated for operation, for specified commodities. The definitions of these terminologies as given in the Bombay Warehousing Act, 1959 are as follows:

(i) 'Warehouse' means any building structure or other protected enclosure which is used or may be used for the purpose of storing goods on behalf of the depositors but does not include cloak rooms attached to hotels, railway stations, the premises of other public carriers and like.

(ii) 'Depositor' means a person who deposits goods with a warehouseman for storing in his warehouse and includes any person who lawfully holds the receipt issued by the warehouseman in respect of the goods and derives title too by endorsement or transfer from the depositor or his lawful transferee.

(iii) 'Warehouseman' means a person who has obtained a licence under this Act for the purpose of carrying out the business of warehousing.

(iv) 'Person' includes a firm, and any Company or Association or Body of Individuals whether incorporated or not.

The rights and obligations of warehouseman are outlined in the respective State Warehousing Acts and rules framed there under. The warehouseman is required to take care of the goods deposited in his custody as a man of ordinary prudence would take care of his own goods. He acts as a bailor and accepts goods for safe keeping. He charges from the bailor certain consideration called "storage charges". He acquires lien on the goods deposited with him for recovery of his dues.

A public warehouse is required to obtain a licence from the Licensing Authority. The Licensing Authority satisfies itself about the storage worthiness of the godown before granting licence. The warehouseman is also required to obtain Weigher, Grader and Sampler licences. A licensed warehouse can issue a receipt for the goods deposited in the warehouse in the prescribed form called a 'Warehouse Receipt'. This receipt may be marked as negotiable or non-negotiable. If the warehouse receipt is negotiable, the depositor can draw advance from any bank against the pledge of the Warehouse Receipt or sell the goods without physical handling.

The warehouse is a key actor in the logistic network:

- Upstream the production: from the supplier to the manufacturer (raw materials, half-finished products, consumables),
- Downstream: from the manufacturer to the customer (distribution of finished products),
- After-sales: from the manufacturer to the customer (spare parts).

By definition, it is a place of transition where the company will:

- Manage a lot of different logistic flows,
- Create added value (flows regrouping and management, prepackaging, synchronization for manufacturer),
- Realize physical and administrative operations,

NOTES

Thus, the economic competitiveness is a leitmotiv for a warehouse. And an effective management is a must.

Some of the important types of warehouses are as follows:

- **Excise Warehouses:** For excisable goods set up by Notification No. 47/2001 CE(NT) did. 26.06.2001.
- **General Storage Warehouse:** Store product for periodic deliveries to a manufacturer or distributor centre Distribution warehouse. They perform distribution services on behalf of their customers.
- **Consolidation Warehouses:** It involves pick and pack operations called for special inventory management and picking procedure.
- **Warehouse Providing Value Added Services:** It provides value added services like repacking, gift wrapping, labelling etc. it provides labour or special equipment to the customers.
- **Cross Docking and Transloading Warehouses:** It involves tracking containers or wagon movement.
- **Break Bulk Warehouses:** These receive product in bulk often by wagons and then repack the product based on customer requirement. It may involve inspection and labelling in case of imported goods.

Storage and Preservation of Stocks at the Warehouses

The total storage capacity available with the warehousing corporations comprise of the constructed godowns, hired godowns and the plinth/open storage space. In addition to constructing their own godowns, the warehousing corporations have also been hiring suitable storage worthy godowns from the market to meet additional demands for storage space. Similarly, at times when covered accommodation is not adequate, storage of such goods like paddy, metals, etc. is also undertaken in open on raised plinth duly covered by polythene covers. This technique is popularly known as CAP (Cover and Plinth) storage technique.

The capacity of a standard conventional godown of CWC is 5,000 MTs. The godown consists of three compartments with carpet area of 10,000 sq. ft. each. The compartments are separated from each other by a perfect partition so that incompatible commodities from preservation and/or insurance point of view can be separately stored. The godown is 'provided with high plinth of 2-21/2 ft. so as to avoid flooding as well as to make the godown rodent proof. Each compartment is provided with three doors of appropriate sizes with rolling/sliding shutters. Air inlets at the bottom and ventilators at the top are provided for the facility of cross ventilation, The sliding shutters, air-inlets and ventilators are provided with wiremesh to prevent entry of birds where at the same time facilitating cross ventilation. Godown roof is usually of corrugated asbestos sheets.

Since in a standard conventional godown of 5,000 MT storage capacity, the total carpet area of godown is 30,000 sq.ft., the thumb rule for determining storage capacity of a godown is 6 sq. ft to one tonne.

The entire carpet area of the godown is not utilised for stacking of commodities. During receipt and issues of stocks as well as during storage, various operations such as haulage of stocks and equipments, movement of man and material for inspection of stock heath, fumigation and disinfestations operations, etc. are required to be undertaken for which about 2% of the carpet area is left as "Alleyway". This is the space allowed between the walls and stacks and in between two stacks for the above purposes. Further space to the extent of about 8% of the carpet area is also left for operational requirement like receipt/despatch of stock, stacking of dunnage, disinfestations, equipment, etc. and for standardisation, rebagging, segregation salvaging, etc.

NOTES

Warehouse (Pre-fabricated)

The steel structure of Warehouse is pre-engineered pre-fabricated.

The main advantage of this type of construction is that super structure can be fabricated in workshop, transported to site and assembled/erected at desired location.

The construction of this type of warehouse is faster in comparison to normal steel truss type structure

Stacking

Stack is a lot of the commodity stored and an ideal stack when fully is perfectly cuboid in shape. In the Warehousing Corporations, a standard stack of food grains is of the size 30'(L) × 20'(B)×15'(H). For proper stacking, every compartment has a well laid out stack plan. Stack outline is drawn on the floor of the godown to demarcate stack area from alleyways/operational space. Every stack is given a distinct number and for accounting purposes and computation of storage losses, etc. the stack is taken as a unit.

Commodities can be stacked in any of the following methods depending upon the type of commodity, type of packages, shape of packages and duration of storage contemplated:

Block Stacking

This type of stacking is commonly adopted method where the bags/packages are stacked lengthwise in one row and breadth-wise in the 2nd row. These two rows forming a block. Blocks are built adjoining each other over the entire stack area. This type of stacking is most ideal because stack building is convenient less cumbersome and the entire stack need not be disturbed if the part of the lot is to be taken out. Peripheral accounting for periodical stock verification is also easier.

Criss-Cross Stacking

In this type of stacking, bags/packages are spread in the lengthwise direction in the first layer over the entire stack area and in the breadth wise direction in the second

NOTES

layer over the entire stack area. This is alternated till the maximum permissible stack height.

While a criss-cross stack is most stable, building a criss-cross stack is time consuming. In case of part delivery, the entire stack needs to be disturbed. Therefore, it posses a problem in accounting and stock verification.

Simple Stacking

In this method of stacking, the bags/packages are just stacked one over the other. This method of stacking is not resorted to in the warehouses since the stack collapses very easily. Such type of stacking is generally followed at the railway goods port wharf or at the godown varandah (receipt point) where the stocks are just dumped for temporary storage before final despatch or stacking.

Dunnage

Moisture in the stored commodities is one of the important factors causing qualitative and quantitative deterioration during storage. Food grains which are dried plant material tend to absorb moisture from all sources including atmospheric air, godown floor godown walls, etc. Other stored commodities such as jute, cotton, etc. also absorb moisture from the floor. Higher the moisture content in the stored commodities, faster is the deterioration due to insect and microbial activities and; therefore, lesser is the storability. The stored commodities also loose weight due to driage resulting in quantitative loss. Permissible limits of such driage loss in different commodities depending upon the period of storage are provided in the respective state warehouse rules. Moisture content of the stocks at the time of receipt and delivery is therefore, recorded using appropriate type of moisture metre and duly authenticated by the depositor.

In order to prevent absorption of floor moisture by the bottom layer bags/ package's, the commodities are stacked on appropriate dunnage. Following dunnage materials are commonly used at the warehouses:

(i) Wooden crates or hope crates of size 5'×2' or other appropriate size

(ii) Bamboo mats prepared out of closely woven bamboo strips

(iii) Polythene films of at least 100 micron thickness.

Wooden crate is the most ideal dunnage. However, in view of the scarcity to good quality wood due to restriction in deforestations and consequent high cost, stocks at the warehouses are also stacked by providing two layers of bamboo mats with a sandwiched layer of polythene film.

6.6.1 Working of CFSs/ PSCTs

Container Corporation of India Limited (CONCOR) has a vast network of container terminals which include CFSs and PSCTs.

At the CFSs/PSCTs ot CWC, both LCL and FCL export/import cargoes are handled.

The PSCTs assist in decongestion of the ports by facilitating quick transfer of import containers from the CT/CY as well as transfer of export containers to CT/CY in time for shipment. At the CFSs/PSCTs custom officials are housed. Banking and users convenience facilities are provided. Thus, the CFSs/PSCTs act as custom documentation centres as well as trade centers for the benefit of the export/import agencies. At the CFSs/ PSCTs, the following facilities are provided:

(a) Export warehouse for aggregation, storage and examination of export cargo.
(b) An import warehouse with strong room facilities and facilities for storage of hazardous cargo.
(c) Public Bonded Warehouse.
(d) Container yard for storage of empty containers with facility for cleaning refurbishing and repairing of containers.
(e) Modem equipments such as Top lifters, Reach Stackers/Heavy duty cranes for handling of containers.
(f) Forklifts (both diesel and battery operated), pallet trucks, platform trolley: wheel barrens, etc. for handling of cargoes of various types.
(g) Accommodation with office facilities for customs and users.
(h) Banking facilities, communication facilities, like pay phones, fax, telex, etc.
(i) Adequate parking space, canteen facilities, etc.
(j) Electronic lorry way bridge for weighment of cargo and container;
(k) Facilities for fumigation of cargo in containers as well as in break to before stuffing with appropriate fumigant.
(l) Reefer plug points for Reefer Containers.

The services provided by the CWC at its CFSs/PSCTs are as follows:

For Exports

(i) Aggregation of export cargo, acceptance of cargo in inventorisation and safe up keep.
(ii) Consolidation of cargo destination-wise and container-wise.
(iii) Documentation and inspection by export inspection agencies.
(iv) Custom examination and clearance
(v) Pre-shipment fumigation wherever required
(vi) Destuffing under export supervision.
(vii) Sealing and transportation of containers to ICD/Gateway Port.

For Imports

(i) Taking over import containers from ICD/Entry Port and transshipment by road to the CFS/PSCT.

NOTES

(ii) Destuffing of containers.

(iii) Stacking of cargo in the import warehouses, inventorisation storage and safe up keep.

(iv) Custom examination and clearance.

(v) Delivery of cargo to the importers on their carriage.

(vi) Transhipment of cargo to the bonded warehouses wherever required.

The CWC has plans to establish CFSs at the following locations:

(i) Kandla

(ii) Udaipur

(iii) Kota

(iv) Nasik

(v) Kanpur

(vi) Emakulam

Pest control has been the specialisation of the CWC. In fact, the CWC is the only agency in the Public Sector authorised to undertake pre-shipment fumigation of export cargo, ship fumigation, etc. by the Export Inspection Council of India. CWC through its trained technical manpower undertakes such specialised jobs like pre-shipment fumigation of export cargo, container fumigation, ship fumigation, etc. at its CFSs/ PSCTs with great ease.

Fumigants like MBr/EDB are used as per the dossage required by the exporters/ importers and nominal fumigation charges are collected. The fumigation certificate issued by the Corporation is accepted by the Quarantine Authorities, Shipping Lines, etc.

Depending upon the requirement of the trade, the CWC has also provided facilities of reefer plug points for handling and storage of refrigerated containers for perishable commodities like meat, marine products, fruits, vegetables, menthol, etc.

6.6.2 Air Cargo Complexes

In order to further meet the requirement of the trade and industry in handling of air freighted cargo, the CWC has established air cargo complexes at Amritsar and Goa. The air cargo complex at Amritsar mainly promotes exports from Punjab, Haryana, Jammu & Kashmir and Himachal Pradesh for Afganistan and middle East countries. The air cargo complex at Singanallur (Coimbatore) is next in the line.

6.6.3 Specialised Storage Arrangements for Delicate/Perishable Commodities

Certain commodities like fruits and vegetables, dairy products, pharmaceuticals, seeds, etc. require temperature controlled storage arrangements. If stored under

normal atmospheric conditions, these commodities deteriorate and loose their commercial value. The CWC has, therefore, set up air-conditioned warehouses as well as cold storages for storage of such delicate/sensitive and perishable commodities. The Corporation's multistoreyed air-conditioned warehouse at Calcutta is mainly utilised for storage of drugs and pharmaceuticals, dairy products, seeds, vegetables and flower seeds, shellac (a forest produce), while in the air-conditioned warehouse at Madras, delicate commodities like Imported liquor is stored. The CWC is running cold storages at Hyderabad, Agartala and Bombay for storage fruits like grapes, apple pineapple and other commodities such as marine products, etc. are stored under temperature-controlled storage conditions. Establishment of chain of cold storages at important producing/processing centres such as Nasik, Pune, Bangalore and at the same locations in the east coast for marine products is under consideration.

6.6.4 Equipments Used in Warehouse

Following are some of the equipments used in warehouses

Fork Lift

It may be diesel, petrol or LPG operated.

- Their capacity varies between 1 to 40 MT and some have lifts of up to 10 metres.
- Multi-purpose fork lift truck can be fitted with different attachments to handle specific load like, carpet, drums, bales or tubes. In principle, they are two basic types: counterbalance and reach.
- Fork lifts improve storage potential, reduce risk of injury and cuts the stacking times.

Palletizer

Machines that arrange product on pallets for shipping, storing or moving. Palletizers have a feed area where it receives the goods to be palletized. Palletizers are used in multiple units to be shipped or stored. Placing the units on the pallets make stacking and moving the load easier and more efficient.

Palletizer can work with drums, sacs, bags, cans cases and various other product types. These are of different types such as automatic palletizer, bag palletizer, can palletizer, drum palletizer, and robotic palletizer

- Depalletizers remove product by layer from pallets for levelling or storing.

Conveyor System

These can be efficient and labour saving devices for moving items from one section of warehouse to another.

- It is common piece of mechanical handling equipment that moves bulk materials. It may involve manual operation or through a power source.
- Gravity conveyor do not require a motor

Automatic Guided Vehicle (AVG)

- It is a mobile transport unit that is battery operated, unmanned and computer controlled. AGVs are programmed to derive to select point and perform designated function.
- Common procedures include load transferring, pallets loading / unloading, towing etc.

Cranes

- These equipments are used in handling of heavy cargo. It can be overhead cranes or stack cranes. Their capacity varies from 10 MT to 40 MT.

Radio Frequency Identification (RFID)

- It is a silicon chip based transponder. It consist of an antenna, reader, and a (Tag) responder. A RFID tag is an objective that can be attached to or integrated into product for the purpose of identification using radio waves.

Lifts

- A service lift of 10' ×10' is envisaged for the transportation of the goods.

DG Set

- Provision is made for DG set for providing standby electric power.

6.7 REVERSE LOGISTICS

Reverse Logistics is the process of moving goods from the ultimate customer to another point, for extracting value that is otherwise unavailable, or disposing them properly. Reverse Logistics has the capability to accept, process and handle return products from the customer. Reverse Supply Chain or Reverse Logistics is the process of planning, implementing and controlling the efficient, effective inbound flow and storage of secondary goods and related information opposite to the traditional supply chain direction for the purpose of recovering value or proper disposal. Reverse logistics is also referred to as "Aftermarket Customer Services". In other words, anytime money is taken from a company's Warranty Reserve or Service Logistics budget that is a Reverse Logistics operation. Companies spend more time and money in fine-tuning their forward supply chains while ignoring their backward supply chains. However, in today's competitive business environment when there is both external and internal pressure, companies can no longer ignore reverse supply chains. Efficient reverse supply chains bring many benefits to the companies. However, reverse supply chains are different from forward supply chains and most of the existing forward supply chains are not designed to handle reverse supply chains.

In today's highly competitive business environment, the success of any business depends to a large extent on the efficiency of the supply chain. Competition has moved beyond firm-to-firm rivalry to rivalry between supply chains. Managers in many industries now realize that actions taken by one member of the supply chain can influence the profitability of all others in the supply chain. Companies like Walmart are trying to squeeze more costs out of their supply chain to offer everyday cheaper price to the customers. On the other hand, more and more companies are focusing on their core competencies while outsourcing the rest. But without efficient and effective supply chain, companies cannot benefit from outsourcing. Supply chain is defined by The Council of Logistics Management as "the process of planning, implementing and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements." However, a company's supply chain is not limited to delivering products to the end-consumers. What about the defective products that are returned by the consumers back to the company?

Though reuse of products and materials is a common phenomenon, companies have long ignored this part of the supply chain, known as reverse supply chain or backward supply chain. A common example of reverse supply chain is the soft drinks bottles pickup and delivery system, where soft drink bottles are returned and reused repeatedly. Companies were so long under the impression that returns compared to sales generate little or no money.

Goods returned to the supplier may be in the form of:

- Manufacturing returns from the production floor consisting of products having unsatisfactory quality or left over materials
- Commercial returns arising out of contracts for taking back obsolete stocks of
- short-life products
- Product recalls arising out of the detection that defective products have been
- released in the supply chain
- Warranty returns of defective products under warranty
- Service returns of products for servicing
- End-of-use returns for re-manufacturing or re-cycling
- End-of-life returns for appropriate disposal

Reverse Logistics activities include the following activities:

- Processing returned products
- Recycling packaging materials and reusing containers
- Reconditioning, remanufacturing and refurbishing products
- Disposing obsolete equipment
- Reuse or disposal of hazardous materials
- Asset recovery

Reverse logistics is a part of the closed-loop supply chain as depicted in Figure 6.2. The reverse logistics parts of the supply chain starts with collection of returned goods or refuse which then pass through sorters to reprocessing (reuse, recycle, recondition, remanufacture, refurbishing and asset recovery) or to disposal. One of the main objectives of reverse logistics is to keep the cost of reprocessing returned/refused materials lower than that of new products in order to keep the venture profitable. Accordingly, transportation and handling costs have to be kept to a minimum.

Often the extra cost incurred in reverse logistics is added to the products when they are first sold new. Moreover, recycling and disposal procedures must incorporate applicable government and environment protection laws. At most companies, returns are primarily managed through a series of disconnected and paper-intensive processes. As a result, it takes the average company between 30 and 70 days to get a returned product back into the market, including return transportation, repair or refurbishing, and redistribution to the customer or market. Moreover, both companies and customers have limited visibility into the returns process. In fact, a manufacturer frequently finds out about a return only after it lands on the receiving dock. Long reverse logistics cycles are harmful for products that have short lifecycles such as high-tech products that can lose up to half their value in a single business quarter. Moreover, Internet-based sales logistics process can result in lost sales, customer dissatisfaction and inventory carrying costs.

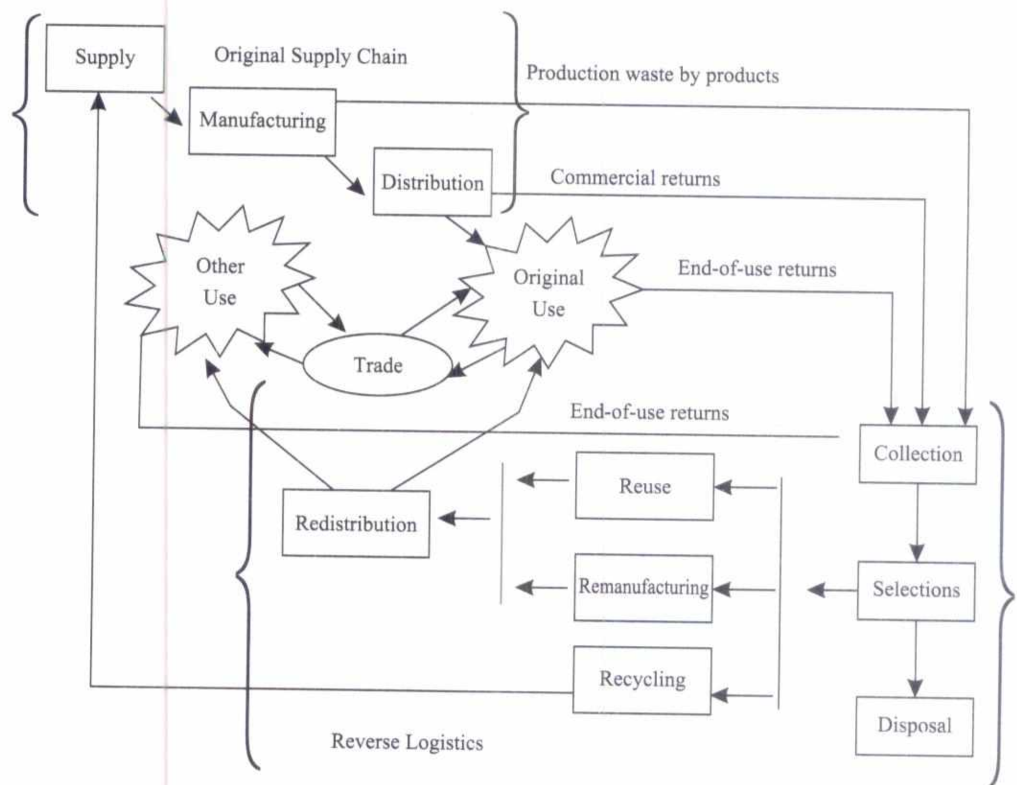


Fig. 6.2: Reverse supply chain

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The Council of Logistics Management defined reverse supply chain as "the process of planning, implementing and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal."

Reverse logistics also includes remanufacturing and refurbishing activities, processing returned merchandize due to damage, seasonal inventory, restock, salvage, recalls, excess inventory and recycling programs, hazardous material programs, obsolete equipment disposition, and asset recovery.

6.7.1 Necessity of Reverse Supply Chain

The foremost reason behind companies giving importance to reverse supply chain is that it reduces operating costs by reusing products or components. For example, previously, Estee Lauder Companies Inc., used to dump nearly $60 mn worth of its products into landfills every year. However, after setting up reverse supply chain it has been able to reduce the volume of destroyed products by half.

Companies have started realizing the importance of reusing products or components; as a result, reverse supply chains are becoming essential part of business. "Retailers/e-tailers are facing challenges as returns policies are becoming more lenient," opines Mike Nardella, Senior VP, Logistics, return buy. C Glenn Mauney supports his views, according to him, "the increased emphasis on new products and product "freshness" has caused a need to clear the distribution channel more often, requiring an efficient means to bring back obsolete, outdated or clearance items." For example, Xerox replaces or upgrades hundreds of office printing machines every month.

In some cases companies are forced to set up reverse supply chains because of environmental regulations. C Glenn Mauney, opines, "many countries/states have instituted regulatory requirements regarding recycling and product disposition that requires increased record keeping and tracking". For example, from 2003, European Union is bringing a legislation that will require tire manufacturers operating in Europe to arrange for the recycling of one used tire for every new tire they sell. Some companies are using reverse supply chains as an integral part of new businesses.

For many large manufacturing and technology companies, aftermarket services form a significant portion of their revenue. Also, providing timely and efficient service has become a key competitive differentiator in many industries. Karen Peterson, VP and Research Director, Gartner, agrees. According to her, "better management of the reverse supply chain translates into higher customer service and consequently, higher customer satisfaction; and industries and the enterprises within them are realizing that management of the reverse supply chain is a revenue opportunity." For example, GE Aircraft engines makes more in servicing its aircraft engines than it did in initially selling them.

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Some firms have also set up reverse supply chain capabilities for altruistic reasons. Nike encourages consumers to bring their used shoes back to the store from where they were purchased. These shoes are shipped back to Nike, where they are shredded, which are then donated to make basketball courts and running tracks. The company also donates funds to help build and maintain those courts. By doing this, companies enhance the value of their brand and also encourage people to purchase their products.

6.7.2 The Starting Point

Though companies have been successful in fine-tuning their traditional supply chains, they need to make change in their existing supply chain management systems to implement reverse supply chain management systems. Says Karen Peterson, "most enterprises do not have supply management systems which handle the reverse supply chain or, if they do, the existing applications are disconnected."

Opined Mike Nardella, "companies need to make a major paradigm change. No longer can companies accumulate returns in the back of the warehouse or stores and ignore the issue of returns." The first step in any successful reverse supply chain management system is to define the rules of reverse supply chain system. Karen Peterson views, "the first and most important activity is to actually understand where the reverse supply chain will contribute profits." Adds C Glenn Mauney, "the initial focus should be on the desired business outcome of the reverse supply chain process and then the policies and procedures that are in place to support that outcome." Many companies accept all types of returns while others do not. A lot also depends on the type of product. The return policy of the companies should clearly mention the type of return. Customers return products for repair or replacement. Channel partners return goods because of excess inventory or products exceeding their shelf-life. Original equipment manufacturers also initiate recalls. Ford recalled its Explorer model because of faulty tyres. Companies also need to educate the customers and establish new points of contact with them.

The different activities in reverse supply chain process are gate keeping; collection; inspection and sorting; reconditioning; disposition; and redistribution. In gatekeeping, it is decided which products to be allowed in the reverse supply chain, otherwise companies might be flooded with products which cannot be recycled, remanufactured or disposed. Good gatekeeping is the first critical factor in making the entire reverse flow manageable and profitable. Next, is the process of collection of the chosen items. A major issue in collection is the high uncertainty regarding locations from where used produced products need to be collected, their quantity and timing. Once collected, the items need to be transported to locations for inspection and sorting. The inspection and sorting is necessary to decide what to do with each item. Companies might capture value from returned products by reconditioning components for reuse or by completely remanufacturing the products for resale. Disposition is the activity which decides where the items will finally go.

Disposition of items is based on quality or product configuration. In redistribution, the company plans to sell the recycled product. While doing so the company first needs to determine whether there is demand for the recycled product or whether a new market must be created.

6.7.3 Reverse Supply Chain vs Forward Supply Chain

Reverse supply chains differ from forward supply chains in information flow, physical distribution flow and cash flow. To manage reverse supply chain, companies need sophisticated information systems. Some of the technology involved in reverse Supply chain is similar while in some areas the technology used differs from that of traditional supply chain. According to C Glenn Mauney, "depending on the volumes and complexity of the returned goods flow, there is some information capture specialization and processing efficiencies in returned goods processing that requires some unique systems." Technology used in reverse supply chain such as realtime inventory tracking system (bar codes and sensors) are similar to that used in the forward supply chain. On the other hand, Devangshu Dutta said that activities such as warranty tracking or de-manufacturing of product is different. According to Agrees Karen Peterson "repair optimization; slow moving inventory optimization; and reverse logistics," are the areas where reverse supply chain differs from forward supply chain. In designing a successful reverse supply chain, it is important to know what type of product will be returned at which point in time at which place and in which condition. Hence, importance of data is immense. C Glenn Mauney opines, "tightly integrated automatic data capture, system directed disposition support, unique receipt handling, credit processing, comprehensive and flexible reporting are some of the important functional capabilities in reverse supply chain."

However, the legacy systems or the standard enterprise resource planning systems used by companies are not effective to support these functional capabilities. What is required is a data warehouse with extranet and intranet technology.

TABLE 6.1: Barriers to Reverse Logistics

Barrier	Percentage
Importance of reverse logistics relative to other issues	39.2%
Company policies	35.0%
Lack of systems	34.3%
Competitive issues	33.7%
Management's inattention	26.8%
Financial resources	19.0%
Personnel resources	19.0%
Legal issues	14.1%

Reverse supply chain also differs from forward supply chain in physical distribution flow. In the reverse supply chain, inbound logistics consists of defective units and other returns from customers. Inbound logistics follow sporadic or random

routing. On the other hand, outbound logistics consists of repaired and remanufactured products; recycle items; or products meant for disposition. Outbound logistics follow both fixed and random routings. In forward supply chain, inbound logistics consists of flow of parts to a factory from the suppliers, which are consolidated, high-volume in nature and follows fixed routing. Outbound logistics in the forward supply chain consists of finished product from the factory to the customers, which is a single unit shipment and follows random routing.

Cash flows in reverse supply chain are in terms of credits and discounts. Customer expects to get a refund on a return, in the form of credit card reversal or a cash discount. Unit warranty tracking is done by product serialization. While in forward supply chain, cash flows are mainly in terms of cash. Customers purchase goods with cash or credit cards.

Check Your Progress

State Whether the Following Statements are True or False

4. The GS1 System has been designed to ensure that all of the elements are compatible and interoperable with each other.
5. Electronic logistics refers to the process which utilizes web technology as an important tool to manage the whole logistic process or some sectors of it.
6. Warehouse means a person who deposits goods with a warehouseman for storing in his warehouse.
7. Reverse Logistics is the process of moving goods from the ultimate customer to another point, for extracting value that is otherwise unavailable, or disposing them properly.

6.7.4 Barriers to Reverse Supply Chain

Successfully implementing reverse supply chain is still a problem for companies, as they face a number of obstacles. Mike Nardella views that reverse supply chain is still treated more like a necessary evil of the back end process of a logistics process. Another barrier according to him is that there is lack of commitment on the part of senior management. Senior management should show commitment in the form of dedicating a team of individuals, software and conveyor systems for reverse supply chain. Devangshu Dutta opines that there are two types of barriers, internal and external barriers. Internal barriers include preparedness in terms of processes, systems and infrastructure of the company to handle returns, while external barriers include amenability of the customer.

Reverse supply chain is the last frontier in the supply chain, which remains to be conquered. C. Glenn Mauney opines, "it is clear that more and more attention is being devoted to the reverse supply chain as companies recognize the critical importance of managing the entire product life cycle." Cost reduction is not the only benefit that can be gained from reverse supply chain. It helps in understanding why products are returned. Was it returned due to quality problem? Were the stores improperly stocked? Was there a labeling problem? Answering these questions enable a company to go to the root cause of returns, resulting in better engineering, manufacturing or distribution. It also helps to get slow-moving products off the shelf, the distribution networks and warehouses. Companies that have been most successful with their reverse supply chains are those that closely coordinate them with their forward supply chains.

6.8 SUMMARY

- Intermodal transport covers combined transport on the international level. It represents the flow of goods where the means of transport (road, rail, air, water) change at least one time on the existing transport route.

- International multimodal transport is logistical concept, which covers the movements of goods from supplier to receiver under the responsibility of a single transport operator. It represents the flow of goods, where at least on one part of the transport chain, two different modern means of transport are involved at the same time.
- Globalisation has been facilitated by the ability to move goods and services across borders at a reduced cost. Just as the computer revolutionised the flow of information, the shipping container revolutionised the flow of goods.
- Since the tragic events of 11 September 2001, the international community has paid increasing attention to the potential security threats to international trade and transport systems. It has been acutely alert to the need for improving container transport security.
- Specialization has led many companies to not only rely on major shipping service providers such as the United Parcel Service (UPS) and Fedex, but also more focused industry specialists that have developed a niche logistical expertise around the shipping of temperature sensitive products.
- GS1 is a not-for-profit standards organisation led by Industry, dedicated to the design and implementation of international standards and solutions to enhance the efficiency and visibility of supply and demand chains across sectors globally.
- Presently the e-logistics has been mostly defined according to the definition of Electronic Logistics, in which the most typical one is that electronic logistics refers to the process which utilizes web technology as an important tool to manage the whole logistic process or some sectors of it.
- The rights and obligations of warehouseman are outlined in the respective State Warehousing Acts and rules framed there under. The warehouseman is required to take care of the goods deposited in his custody as a man of ordinary prudence would take care of his own goods.
- Reverse Supply Chain or Reverse Logistics is the process of planning, implementing and controlling the efficient, effective inbound flow and storage of secondary goods and related information opposite to the traditional supply chain direction for the purpose of recovering value or proper disposal.

6.9 KEY TERMS

- **Intermodal transport:** Intermodal transport can be defined as the movement of goods in one and the same loading unit that uses successively several modes of transport without handling the goods themselves in changing transport modes.

NOTES

- **International multimodal transport:** International multimodal transport is logistical concept, which covers the movements of goods from supplier to receiver under the responsibility of a single transport operator.
- **Cold chain:** It refers to the transportation of temperature sensitive products along a supply chain through thermal and refrigerated packaging methods and the logistical planning to protect the integrity of these shipments.
- **Reefers:** Generic name for a temperature controlled container, which can be a van, small truck, a semi or a standard ISO container.
- **GS1 System:** It is a flexible architecture that ensures maximum efficiency.
- **Electronic logistics:** Electronic logistics refers to the process which utilizes web technology as an important tool to manage the whole logistic process or some sectors of it.
- **Warehouse:** Warehouse means any building structure or other protected enclosure which is used for the purpose of storing goods on behalf of the depositors.
- **Depositor:** Depositor means a person who deposits goods with a warehouseman for storing in his warehouse.
- **Reverse Logistics:** Reverse Logistics is the process of moving goods from the ultimate customer to another point, for extracting value that is otherwise unavailable, or disposing them properly.
- **C-TPAT:** Customs trade partnership against terrorism
- **GSMP:** Global Standards Management Process

6.10 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Intermodal transport can be defined as the movement of goods in one and the same loading unit that uses successively several modes of transport without handling the goods themselves in changing transport modes.
2. The term perishable products encompass fresh fruit, vegetables, meat, dairy and eggs. These items need to be shipped under strictly-controlled temperature and storage conditions.
3. Port-to-port reflects moving cargo from say Mumbai to New York. This is used when cargo volume does not provide for a full container load (less than container load or LCL) or when the shipper or consignee does not have the facilities to load or unload the containerized cargo at his premises, he or she can utilize the services of forwarders, consolidators or the carrier to stow the goods in containers at the port of departure.
4. True
5. True
6. False
7. True

6.11 QUESTIONS AND EXERCISES

NOTES

Short Answer Questions

1. Write short note on logistics of time perishable and logistics of quality perishables.
2. What is GS1 system and Special Logistics?
3. What is E-logistics and warehouse logistics?
4. Differentiate between reverse supply chain vs forward supply chain.
5. Explain the barriers to reverse supply chain?

Long Answer Questions

1. Discuss the intermodal and multimodal logistics.
2. Discuss logistics for trade fairs and events.
3. What is cold chain? Discuss in detail.
4. Describe the GS1 system of world-wide supply chain standards system.
5. Explain the storage and preservation of stocks at the warehouses.
6. What is reversing logistics? Also examine the necessity of reverse supply chain.
7. What is meant by e-logistics? State the various issues involved in it.

MODEL QUESTION PAPER

DISTANCE EDUCATION

MBA Degree Examination

Third Semester

3.6: Retail Logistics and Supply Chain

Time: Three hours *Maximum: 100 Marks*

PART A **(5 × 8 = 40 Marks)**

Answer any FIVE Questions

1. Green Logistics as eco-management of both forward logistics and reverse logistics". Explain.
2. What are the peculiarities and diversity of needs of Logistics for retailing?
3. What is demand forecasting? Explain the forecasting consumer demand.
4. Discuss the assembling and labeling from multi-storage points and delivery.
5. Discuss the packing and marking of product.
6. "Various documents are prepared and submitted for smooth movement of goods from one country to another country". Explain.
7. What is supply chain engineering? Explain.
8. What is reversing logistic? Also write down the necessity of reverse supply chain.

PART B **(4 × 15 = 60 Marks)**

Answer any FOUR Questions

9. Discuss logistics as a competitive edge driver.
10. What is Kanban? What are the benefits of kanban? Explain kanban cards, kanban boards and electronic kanban.
11. Describe logistics as an enabler of Just-in-Time (JIT).
12. Explain multimodal transport. What are the features of multimodal transport system? Also explain the different types of operator.
13. What is the procedure for clearance of imported goods?
14. Discuss the 4pl value added services and with reference to growing importance of knowledge transfer.
15. Explain the storage and preservation of stocks at the warehouses.

MBA (RETAIL MANAGEMENT)
PAPER- 3.6

RETAIL LOGISTICS AND SUPPLY CHAIN



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DIRECTORATE OF DISTANCE EDUCATION

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